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JUSTEIS (JISC Usage Surveys: Trends in Electronic Information Services) Strand A

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JISC User Behaviour Monitoring and Evaluation Framework

JUSTEIS

JISC Usage Surveys: Trends in Electronic Information Services

**Strand A: Survey of end users of all electronic information
services (HE and FE), with Action research report**

Final report – 2002/2003 cycle 4 report

Department of Information Studies

University of Wales Aberystwyth

with

**Information Automation Ltd (Centre for Information Quality
Management)**

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Executive summary

Aims and objectives of JUSTEIS Cycle Four

There were five main elements to JUSTEIS work in 2002/2003:

- monitoring user behaviour – identifying trends in the way staff and students are using electronic information services (EIS) and the approaches senior library managers are using to manage EIS, and develop M/VLEs
- examination of the provision of EIS on library (LIS) Web sites (Strand C)
- action research at FE college sites, to examine in more depth how effective EIS use can be promoted
- data mining – in-depth data analysis of data obtained in earlier cycles, to provide, for example, evidence about the barriers to e-learning and how these might be overcome
- dissemination of findings, in collaboration with the JUBILEE project, through a series of briefing papers to JISC sub-committees, plus workshop dissemination day in June 2003.

Scope of project

Number of students interviewed = 239 (151 FE, 88 HE), across all types of disciplines
Number of questionnaires obtained from students = 355 (201 FE, 154 HE)
Number of participating institutions = 26 (16 FE, 10 HE) (Russell to specialist colleges)
Number of participating departments = 31 (19 FE, 12 HE)
Number of senior library managers interviewed = 10
Number of academic staff interviewed = 19 (11 FE, 8 HE)
Number of LIS Web sites analysed = 50 (30 FE, 20 HE)

Key messages

Virtual/Managed Learning Environments – the problem plateau

This year we have confirmed that most staff and most institutions can, fairly easily and quickly, attain the first stages of VLE development, the provision of learning resources, and course details on the VLE. This 'resource dump' stage emulates what many institutions have produced on departmental Web pages or institutional intranets.

Getting beyond that point, to use the VLE as a learning environment, using the functionality of the VLE, is more difficult. The problems identified include:

- the contact hour culture. The contribution of teaching staff may be assessed in terms of their 'contact hours'. The VLE is viewed in terms of what it can do to supplement the contact hours – which it can, successfully, but this not what e-learning is really about – or should be. But, do VLEs do all they offer to do?
- lack of awareness among teaching staff of the possible benefits of a VLE for individualisation of learning, student-student support and group learning.
- lack of emphasis on information skills. Students may become too reliant on the approved and vetted resources within the VLE and their skills in evaluating and appraising information may decrease, rather than increase.

Strategies to help realise the benefits of VLEs may include:

- introducing students early to reflection on 'how do you learn – and e-learn?'
- supporting teaching and LIS staff in e-learning through training which focuses on benefits to learning, recording of learning, and subject-specific needs.

Implications for an e-learning strategy

In the e-learning strategy *Towards a Unified e-Learning Strategy*, published by the government (DfES) in July 2003, several relevant points are made:

- Need for professional development (and possible differentiation) of the education workforce, evaluation and communities of practice (paras 69, 72, 73)
- e-learning: information skills are for life (paras 93, 94)

Recent HEFCE consultation documents (*Consultation on HEFCE e-learning strategy* 21/2003, *Rewarding and developing staff in HE – round 2*, 2003/33, and *Centres for Excellence in Teaching and Learning*, 2003/36) stress:

- lack of evidence for the effectiveness of new technologies on learning (21/2003, para 18)
- the role of JISC Infonet in change management (21/2003, para. 24)
- supporting appropriate investment in e-learning, MLEs and VLEs, through CETLs, National Teaching Fellowships and the Higher Education Academy (21/2003 para 25, 2003/36 para 23)
- supporting and developing staff (21/2003 paras 27, 28, 2003/33 paras 28-30)
- need for a coherent approach to information for learning and teaching (21/2003, para 30)

Themes identified in the JUSTEIS research stress the importance of:

- developing a 'community of practice' in e-learning which embraces **all** staff in appropriate professional development, encourages co-operation between academic and learning support staff, and promotes research in e-learning.

Key Skills

Key Skills, or Professional/Transferable Skills often need to be integrated carefully into the curriculum to make them relevant and acceptable to students, although there is the danger that a 'national standard' may disappear if much adaptation occurs. There is a gap between information skills developed at Key Skills level 2 and the information skills required by students going on to higher education.

FE students surveyed were more likely to stress the importance of presenting information retrieved from the Internet 'in their own words' than HE students. This emphasis is gained from their Key Skills (IT) work. HEIs wishing to combat 'copy and paste' plagiarism might usefully adapt some FE approaches.

RSCs and National Learning Network Materials

Our impression is that the level of activity varies. At some sites, RSCs are clearly well known and working with the college. In others, the college library staff may be aware of the RSC but there has been little, if any contact. RSCs need to be aware that those who do not shout may be among those most in need of support.

There is some awareness of National Learning Network materials. Many FE College staff use organisational Web sites to obtain relevant vocational information – sometimes successfully, sometimes less so. Some FE interviewees note that the Internet is fast becoming their only resource. FE students may be averse to 'book learning' and they like the Internet as it is 'interesting' and fun – similarly they like CAL packages.

Purchasing and development of learning resources

Those in charge of purchasing electronic information and learning resources may need to follow a few guiding principles rather than attempting formal collection development. There are unmet niche needs (black culture, for one, in the FE sector). Similarly, in HE, some specialist databases, not covered by JISC/CHEST at present, are being used.

OVERVIEW REPORT

Acknowledgements

The authors are grateful to all those who contributed to the research. The success of the project is dependent on the willingness of many academic staff and students to give up some time to help us in this work.

We also wish to acknowledge the support provided by the JISC, in particular the JISC Secretariat (Sonja Bisset, Faye Gardiner and Rachael Corrie), Malcolm Batchelor (Engagement Programme Manager, JISC Outreach and Institutional Support). We naturally find the sharing of experience and knowledge with the companion project JUBILEE very useful, as their expertise complements that of our team.

A1 Introduction

The overview report deals first with the main trends identified in the uptake and use of electronic information services in 2002/2003 (Cycle Four).

The main themes in the Action Research element of the JUSTEIS work follow, including the lesson that one of the main outcomes of the project is in the initial stages of encouraging students to reflect on their information seeking.

The final part of the overview discusses the results of the more in-depth analysis of the qualitative data (from previous Cycles). The findings of this are set against some of the emerging trends identified in this Cycle, indications from other relevant research, including JISC projects.

The Section numbers in brackets refer to the Sections of the main reports.

A2 Monitoring user behaviour

A2.1 Aims and objectives (work package 1)

The aim of this was, as in previous cycles, to provide evidence of any trends in user behaviour, and to assess more fully the reasons for the trends in user behaviour. There are several elements to this, the survey of staff and students to find out which EIS they are using, and why, the survey of LIS web sites to examine provision of EIS, and the survey of senior library managers to examine their intentions in purchasing EIS. This cycle has focused also on the impact of MLE and VLE developments on use of EIS.

A2.2 Sample

Number of students interviewed = 239 (151 FE, 88 HE), across all types of disciplines
Number of questionnaires obtained from students = 355 (201 FE, 154 HE)
Number of participating institutions = 26 (16 FE, 10 HE) (Russell to specialist colleges)
Number of participating departments = 31 (19 FE, 12 HE)
Number of senior library managers interviewed = 10
Number of academic staff interviewed = 19 (11 FE, 8 HE)
Number of LIS Web sites analysed = 50 (30 FE, 20 HE)

As indicated above, there was more emphasis on FE institutions in this cycle.

A2.3 Purposes of EIS use

There are few changes in the profile of reasons why students are using EIS. This year, as last year, both HE and FE students explained that the main reason for using EIS in a recent search was for assignments, particularly project or dissertation work. There was no change in the proportion of searches described that involved leisure or shopping purposes. The split is approximately 85% academic/ 15% leisure. (Section 2.3.1, 3.3.1)

A2.4 Profile of EIS usage and search engines

Unsurprisingly, perhaps, search engine use predominates among both HE and FE students, and particularly among FE students. Between 75% and 80% of the searches conducted by undergraduates involved search engines, and for FE students around 90% of the searches involved search engines. As noted last year, students tend to apply the term search engine to other databases (Sections 2.3.2, 3.3.2).

A2.5 Trends in EIS usage among undergraduates

Search engine predominance tends to drown out other trends, but undergraduates use and value the following electronic resources (see also A2.7):

- HEI Web site / MLE /VLE
- electronic journals (but no increase)

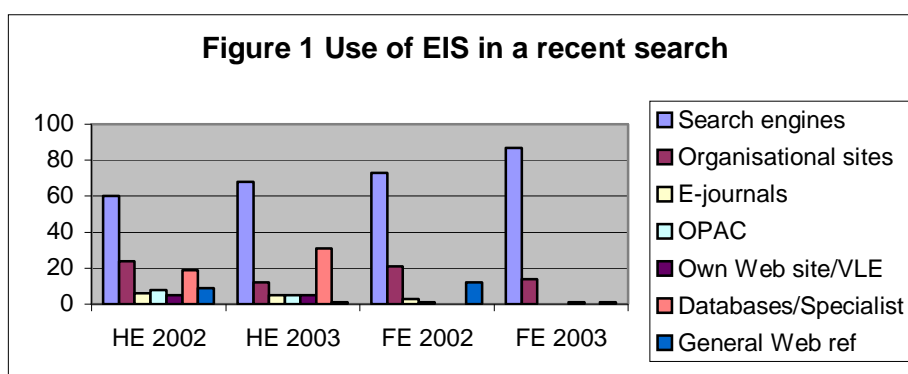
- bibliographic databases and specialist, usually scientific databases and Web resources (around 25% of undergraduates are using these).
- OPAC (used most by Humanities and Arts students, but decrease in usage this cycle) (Figure 1)

Niche, specialist databases are being used, with most (though not all) covered by JISC/CHEST agreements.

'I was doing reactions, organic reactions and I needed, well I first searched for journals and things on the Internet and then I needed some names for compounds so I used Beilstein online.' (UG student)

Undergraduates are, increasingly we believe, going to known Web sites, usually organisational sites. Their increasing reliance is a reflection of the attempts by many organisations, including educational services such as the BBC, to develop added value, portal services on their sites. (Sections 2.3.2, 2.3.3, 2.6.1-2.6.3)

'I was looking for attitudes towards the monarchy because that's my dissertation area and I'd heard that MORI has done quite a lot of research in that area so I went on to their Web site and searched, did an advanced search on monarchy attitudes, then it came up with relevant studies that had been done.' (UG student)



A2.6 Trends in EIS usage among FE students

There are few changes this cycle. Many of the sites visited are still developing their MLEs/VLEs, and although National Learning Network materials were mentioned (by staff) there was little evidence that these were being used in the departments visited, although there were certainly plans to do so.

FE students make negligible use of OPACs, and their use of search engines is increasing (Figure 1).

FE students, as noted last cycle, make use of organisational Web sites, and much of the information they require for vocational courses may increasingly be available only on the Web (Section 3.3.2, 3.3.3, 3.8.3)

A2.7 Routine information seeking and information literacy

Drawing conclusions about development of the 'hybrid library' from examination of student use of electronic sources alone can be misleading. This year we detect that the glamour of the Internet may be wearing off. When we asked students how they would tackle a routine course problem, responses indicated that the Internet is not viewed as the answer to all problems, and that books (library plus personal course textbooks) are still a major learning resource, though more so for undergraduates than for FE students. In comparison to last year, fewer students (FE and HE) this year would rely solely on the Internet.

(Sections 2.6.2, 2.6.4, 3.5.2, 4.3.4)

A2.8 Trends in information skills education and training in higher education

Among HEIs, the influence of teaching quality assessments and the need to develop proper programme specifications seems to be ensuring that many departments (and institutions) are developing coherent and integrated information skills programmes.

Key Skills programmes, or Professional Skills programmes are now mentioned in HE departments (particularly in New Universities, Old Non-Russell Universities, and Colleges of Higher Education). Comments from students indicate that these are appreciated.

'Loads, everything, they've taught us to use Beilstein, Web of Science...how to look up foreign journals, they've been really good...It's sort of ongoing really, mostly in the first year, I think we might have had a little bit in the second year...It's in the Personal Professional and Transferable Skills module which I think they have at least once a year...One of the lecturers is from the library and the others, there are about three of them, that are from the department.' (UG)

In other departments and disciplines information skills are integrated into research methods training.

'Research methods modules run throughout the first year and the second year and they are designed just to build on the foundations of research.. and what we're doing because we've revised the course and the new current first year, we're getting the first year of the new course which has that inbuilt training so hopefully as they go through the course we'll develop a culture in the students used to using those sorts of things.' (HE lecturer)

(Section 2.8)

A2.9 Trends in Key Skills and information skills in further education

The Key Skills framework is working successfully and most (though not all) students appreciate the skills they acquire. Information skills, as a part of IT key skills, were emphasised more at some of the sites visited this year.

'We did Key Skills, IT Key Skills, we did a few hours worth of just different searches and how to narrow it down just to get all the good results rather than all the rubbish.' (FE student)

'Although we worked on the Internet it was never really specified to proper searches, it was more putting together letters and CVs, projects and stuff, useful stuff.' (FE student)

There may be a problem at the Key Skills level 2 and Key Skills level 3 interface, particularly for preparing students for higher education. Staff appreciate that students need the Level 3 skills but the assignments do not appear relevant.

'We were thinking of level 3 but level 3 involves too much work on databases and it's contrived, and they've got enough work to do.' (FE lecturer)

Resource-based learning sessions may be popular with students.

'We have an hour RBL session once a week, we each have our kind of teacher, she'll tell use how to search for things in the books or on the computer, how to write bibliographies. If we need any help with our coursework she's there...which is good.' (FE student)

(Section 3.7)

A2.10 Collaborative working

Collaborative working for research purposes, as supported by the e-Science grid and similar initiatives, is established, and thriving in the HE sector. Collaborative working in the FE sector, supported by EIS, is developing.

'We're currently involved in a project. We're setting up a satellite project, foundation degree for classroom assistants. So I'm currently involved with part of the working group on that project.' (FE lecturer)

(Sections 2.5, 3.4)

A2.11 Staff training

The picture is varied, but there is evidence of more structured provision, and use made of that. Examples include PG Certificates for ILT accreditation (see below) in HE.

'This was three years ago. It was led by a member of staff from Information Services who talked about the different networked and non-networked databases and other information sources to which we have access...The level of how easy it is for students to access them, the kind of advice we might give students about accessing them...one of the essays that you're required to write for this is about designing a course and planning the learning resources, assessing and evaluating the potential for the use of C&IT.' (HE lecturer)

Similarly in FE colleges, staff may have done a PGCE which helped them with their IT skills. Training is offered – and mentioned as the norm.

'I mean they do the driver's licence [ECDL] there's nothing else I'm aware of. I'm quite happy with what I've got anyway because I've taught myself.'

'Yeah, we've got plenty of training. We've got regular staff development days where there's always some form of IT training going on.' (FE lecturers)

(Sections 2.8.6, 3.7.6)

A2.12 VLEs – strategic institutional developments during 2003

At the sites visited, FE colleges tend to be going down the MLE with VLE route – student administration, course details are being implemented first, followed by consideration of the VLE as a learning environment. In the FE sector it is noticeable that some institutions have more or less bypassed the stage of making a portal through the OPAC whilst others are merely running a 'presence' on the main institution site, with the main information only being available from the intranet.

'Well the library has a presence on the, what's called the corporate website here, the internet, and we have a presence on that. But it's a very basic presence because the whole kind of thrust of the college is to put as much information on, we've got this thing called [name of MLE/VLE], you know, so why not use it as much as possible. So there is a very basic presence on the library internet, on the college internet site.' (Library manager)

FE colleges with HE students are aware of the need to provide a seamless interface but senior managers have sometimes to be pushed.

'But the HE group is growing. That's very, very demanding. And that's what all this is coming. And also the whole push...distance learning and trying to get it in Blackboard which is the... I think we've got something called [name] and we've had it for a couple of years which is similar to Blackboard but not as good and I think they've bought it and they're now going to abandon it and go for what everybody else has got. But nobody's taken that up... but he is aware there's a lot of funding available for initiatives to get course work and not just putting the course work flat on but making it interactive and having chat and nobody in this college is doing anything about it and I'm saying look this is really becoming urgent.' (Library manager)

HEIs have a different history behind VLE development, and some of the previous thinking, as well as the technology may need some unpicking, in order to start afresh. There is a big gulf (See later discussion of VLEs – the problem plateau) between getting the basic supplementary resources up and using the VLE as an e-learning environment.

'At the university...we have a lot of learning resources on our Web pages. Um but there isn't really anything interactive. I mean we've experimented a bit with WebCT but we're not actually, I mean it's something I think we probably will make use of in future but not yet.' (HE lecturer)

'We have a phone directory, we have module lists, and modules per student...we've got photos on there as well which we use quite a lot especially first years where we haven't quite put faces to names yet...For putting information on, I don't use it at the moment...Our intranet's in a state of flux at present...I used to have all my stuff on Word, it went to Powerpoint and now they're talking about having put it back to Word to put it as html documents to put on the Intranet. You know, I'd have to translate everything again.' (HE lecturer)

E-learning may require a different culture of learning within the department and departments where there is a culture of 'this is how you learn' may be more successful in VLE implementations. Just how students e-learn is, if course, a question for research.

I think the environment has already created 'this is how you learn' ...it takes that big shift, and once that shift is made and everything is much easier and luckily we've already built up that culture.' (HE lecturer)

(Sections 2.9, 3.8, 4.3.5)

A2.13 Students and e-learning, VLE use

This year there is more evidence, among disciplines other than the sciences, of the interactive use of VLEs as learning environments.

'There's a move in the class to try and involve people more in that [creative writing page] to post their own work up on the Web site.' (HE postgraduate)

'Like MCQs. It's basically we go on there, have to fill them all out and they mark them electronically and give us the results back...we go on to the department home page...there was something to do with our biochemistry...it was sort of simulation...and there were a few jazzy things that ran across the screen. It was more a visual way of reinforcing all that had been said in lectures.' (HE student)

Students are approximately twice to three times as likely to mention use of the VLE for administrative, simple resource access purposes as they are for interactive learning.

'A lot of my tutors put up announcements on there, things like...essay titles came out on Blackboard for a couple of my modules. The course documents are all there so it you miss a lecture all the lecture notes are up there.' (HE student)

The FE sector uses industrial training materials and these are increasingly Web-based, sometimes moving from CAL packages to the Web.

'We do get tutors but the actual Cisco module is web-based, so that's quite a lot of usage there.' (FE student)

Peer-peer support proves useful and could be exploited more.

'It was a pilot scheme [teacher training], we only went in about five or six mornings, and the rest of it was on Blackboard. But it was very well set up, assignments were on there, we could communicate with other students which was again something which I think could be really developed. It was great. If you had a bad time teaching you could vent your feelings and someone else would be able to come back to you and say "well, I've had the same thing". And I can see it working in other courses.' (FE student)

A2.14 Purchasing, collection development, and IPR

A recurrent theme in the FE sector is education and training – education and training for upskilling of LIS staff for e-learning, and support of student learning, in collaboration with teaching staff, on a far greater scale than before.

'We have up skilled the staff. There are more professional librarians, there are younger professional librarians that have just come out of universities...and one in particular is working heavily within Blackboard. And she's working with Infotrac in Blackboard and is exploring ways that we can link in. And with teaching staff. We're not working in isolation I think we should stress that' (Library manager)

Most of the sample were from the FE sector and it was not surprising therefore that there was little awareness of the open archives initiatives, the implications of author self-archiving. Interviews in previous cycles have suggested that many senior library managers are not really aware of the implications of intellectual property rights for research and learning materials within their universities.

'I haven't really got enough knowledge on this bit. It's a comment. I know various institutions are doing things like open access archives and so on and authors are depositing stuff locally but I'm sure there's various initiatives, I can't remember what they're called now.' (Library manager)

The hybrid library remains hybrid – and the pattern is not generally shifting in one direction or the other. Some institutions are reporting their hard copy collection use is increasing, others reporting they are decreasing and others saying they are static.

'Right, well that's quite interesting because we had the general feeling that we had fewer people visiting the library and fewer book loans. But when we actually looked at the figures I should think that probably it was more a levelling off rather than a reduction. We do, I know we do have more people using electronic services remotely so they don't need to come to the library now to look things up. But the book loans... My, again that hasn't fallen off but I think it's different users. I think we have a proportion of FE students here and also we have quite a lot of associate students and mature students who probably are more likely to use books rather than electronic. So we've still got quite a big population who go for books first. In fact even our undergraduates I think go for books first and so the book loans have remained fairly high although they're not growing.' (Library manager)

(Section 4)

A2.15 Developments in LIS Web site – EIS provision

Examination of LIS Websites during the Strand C survey suggested that in general terms the HEI sites differed little in size, structure and complexity from those examined during previous cycles; CFE Websites are generally smaller and less complex. Growth of use in this sector continues and all CFE sites examined showed evidence of facilitating access to EIS (a rise of 59% since the last cycle). Levels of commitment remain small with half only mentioning specific resources elsewhere on the site (i.e. having no dedicated LIS area) while only 23.3% had subject trees compared with 80% of the HEI sites.

The distribution of links to the various types of Websites also does not differ markedly from those for other HEIs and CFEs examined in previous cycles. The data seem to show that further education has begun to recognise the value of JISC-negotiated services (as well as of OPACs, Web databases and local EIS) (see above for their lack of use).

No CFE links to the top level RDN but the individual gateways or hubs are used as much as anything else – it seems likely that further education has accepted the need to focus more precisely on relevant resources. Fourteen of the CFEs surveyed had no OPAC and it was not possible to determine the catalogue status of four more. All twelve of the

remaining CFEs link to the OPAC from their LIS Website. One HEI with no OPAC (plus two undetermined) left 17 HEI LIS sites offering access online to their OPACs.

Numbers of HEIs do still make use of some database aggregators – probably to access databases not available through the JISC services. CFEs, on the other hand, make very little use of these EIS.

In HEIs, use of text archives and e-book aggregators (netLibrary, Questia and ebrary) has increased since the last cycle, although it is too early to see the effects of the JISC e-book collections coming online. Nine of the twenty HEI sites are linking to either an aggregator or one of the major archives, and sixteen show links to many other text archives – two sites linked to over 80.

HEIs have to subscribe to more than one e-journal aggregator in order to provide the range of titles required by their faculties. In fact, 75% of the sites examined subscribe to more than one aggregator. As with e-books, e-journals do not seem to be much favoured by the further education sector and close examination of the data reveals that the five sites with links to e-journal collections subscribe to six different aggregators; only one of which – Emerald – is used by more than one CFE. Only two CFEs subscribe to more than one aggregator. Seventy percent of HEIs and 20% of CFEs also linked to full-text databases such as BioMed Central or ProQuest Direct.

Many Websites link to quite large numbers of search engines (one HEI site to as many as 74 while the highest number for CFEs was 23). Interestingly, 80% of the CFE sites linked to no search engines at all.

(see Separate Report on Stand C)

A3 Action research

A3.1 Aims and objectives (work package 2)

Six sites were selected for action research studies in Cycle Four. Of these, three were identified from research work conducted in Cycle Three. The institutions included rural county town, and inner city sites, with one specialist college in the group.

Interventions varied both in format and scope. The aims and objectives were, as far as possible

- to examine the process of benefits realisation for EIS
- to develop appropriate performance indicators which might be used in a Balanced Scorecard evaluation framework (Sections 5.2, 5.8)

A3.2 Action research themes

The following include some of the outcomes of the research as well as reflections on implementing interventions to improve uptake of EIS in the sector.

A3.3 Facilitation

The role of the researcher is to act as the link person, to keep in touch, do some of the thinking and background research and generally 'oil the wheels'. Facilitation takes some time to organise, and getting the timing right is crucial. (Section 5.8.1)

A3.4 Students' reflection on their information skills

One of the main gains from the action research is in the initial discussions where students are encouraged to reflect on their information skills in a more structured way. Students may not be as self-critical as they should be. (Section 5.8.2)

A3.5 Ensuring interventions are relevant

For the teachers and managers some tie-in with current agendas (Key Skills, e-learning, widening access) makes the intervention worthwhile.

For the students, particularly those who have had bad experiences of formal education, the action research should focus on skills which make sense to them for their coursework. (Section 5.8.3)

A3.6 Evaluation and performance measurement

For the action research sites in this cycle, the major first steps are, as indicated, facilitation for staff, encouraging reflection by students and ensuring interventions are seen to be relevant.

Once these are achieved, the next step might be to move on to consideration of performance indicators for the four balanced scorecard ¹perspectives for performance evaluation (customer, internal processes, financial, learning and growth).

Balanced scorecard perspective	Main benefit/barriers identified	Performance indicators
Customer (Student)	Students save time through access to resources off campus	Percentage of tailored electronic resources available on campus that are also available off campus
Internal processes	Academic and LIS staff need to work together, and also with RSCs	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.

Table 1 Balanced scorecard framework

A4 Information literacy and e-learning – in-depth analysis

A4.1 Aims and objectives (work package 3)

The aims and objectives of WP3 (data mining for user behaviour) were to provide a more in-depth coding and analysis of data collected over the previous three Cycles. There was a considerable amount of rich data obtained from staff and student interviews which had not been explored in depth. (Section 6.1)

A4.2 Developing questions for the in-depth analysis

Questions that affect the 'awareness, liaison and training' remit of JCALT and which emerge, from synthesising the indications of Cycle Four JUSTEIS (Section 6.2), current research, including JISC projects (Section 6.3) with the June 2003 dissemination workshop conclusions (Section 6.4), are:

- What does influence students in their choice of information services when seeking information? How do teaching staff affect the choice? (Section 6.6)

¹ Kaplan RS and Norton DP. *The balanced scorecard: translating strategy into action*. Boston, MA: Harvard Business School Press, 1996.

- Do students progress in their information skills, as some frameworks indicate they should, towards critical use of a variety of resources? How are students using specialist services such as electronic journals, for example? (Section 6.7)
- How do Key Skills frameworks improve information skills (Sections 6.7.2 to 6.7.3)
- Are students encouraged to reflect on their information skills competence? (Section 6.7.4)
- What do students think about induction and training for use of Library and Information Services? Do some institutions, or subject areas, tend to provide better support? What lessons can be learned? (Section 6.8)
- How could VLEs develop more effectively? (Section 6.9)

A4.3 Staff influences on students' choice of information services

KEY QUESTIONS

How should FE staff help students to improve their information skills?

When, and how should academic staff in HE provide advice?

In particular, is the dissertation or final year project too late for academic staff to be giving specific advice to undergraduates, or showing them how to find and appraise information?

RECOMMENDATIONS

FE lecturers should continue to encourage students to think of different routes to finding the information they require.

LIS staff in FE need to ensure that students can retrieve and select the information they need from an OPAC, as students will need those skills if they progress to higher education.

Not every discipline might be expected to follow the same 'critical appraisal' route used successfully in the clinical and biological sciences – BUT the first year might be a good time for academic staff to help undergraduates to evaluate information and to make such evaluation an expectation of their coursework.

(Sections 6.6.1-6.6.2)

A4.4 Progression in information skills among undergraduates

The BigBlue report (Section 6.3.2) envisages that information literate students should be able to:

- recognise an information need
- address the information need
- retrieve the information needed

As students progress through their degree programme they should, presumably, be developing skills in selecting and using resources appropriate to their information needs. It might be expected that students should be able to explain their rationale for the search for coursework (Section 6.7.1.1). What is of some concern, perhaps, for matching the research findings to the theoretical frameworks proposed of the 'information literate' person is that students do not necessarily articulate such information skills when talking to interviewers about searching for information for their assignments. There is some discernible progress in information skills, but students are not always able to reflect on such skills. (Section 6.7.1.2)

KEY QUESTIONS

Do students opt to use more specialised services (e.g. the services provided through JISC) as they progress? If not, why not?

How can students be persuaded to use such services?

RECOMMENDATIONS

Students need to be persuaded of the benefits of investment in time required to learn to use these services.

Direct and specific assignment requirements provide an incentive to use such services.

Students may also be persuaded to use such services if the information is demonstrably more reliable, more authoritative, current – and that using these services saves the students time. The time savings are likely to be apparent if students are well acquainted with the mechanics of the various saving, downloading and printing options.

A4.5 Progression in information skills among FE students: Key Skills

For FE students, progression in information skills has to be assessed against the Key Skills framework. Of interest were students' views of their information skills and the Key Skills support (Section 6.7.2.1) and whether the Key Skills framework was providing students with the skills they might need if they were to progress to higher education. Government policies stress the need for a seamless interface – is this being achieved as far as information skills are concerned? (Section 6.7.2.2)

KEY QUESTIONS

How do FE students perceive information skills as Key Skills (IT)?

The Key Skills framework is apparently effective for many students, but is there a significant gap between Key Skills 2, and the skills that might be expected of higher education students for evaluating the information they retrieve?

RECOMMENDATIONS

Programmes designed for Higher National Diploma students and students entering higher education need to allow for sufficient practice in developing skills in evaluating information retrieved.

From Key Skills (IT), FE students are fully aware of the need to put information they find 'in their own words' – a lesson that might be learned for HE induction programmes to help combat 'copy and paste' plagiarism.

A4.6 Key Skills in higher education

Most institutions are gradually developing programme specifications which include some specification of key skills, and are likely to be based on the QCA framework (Section 6.7.3)

KEY QUESTION

How should Key Skills for IT and information skills be implemented within higher education?

RECOMMENDATION

A Key Skills for IT and information skills programme in HE should relate to appropriate subject content, to ensure students see the relevance of such programmes. Stand-alone programmes are not as effective.

A4.7 Satisfaction, dissatisfaction, confidence and lack of confidence

From a marketing perspective, information service providers and content providers need to know what makes their product attractive to the consumer. What is it about the product that customers particularly like, is the experience of using the product pleasant, and does the product meet their needs? Interviews with students revealed how their satisfaction with the process of searching for information was affected by whether they got the results required (or better) (Section 6.7.4.1), and that a perceived lack of specificity led to some degree of dissatisfaction (Section 6.7.4.2). Some students were able to reflect critically on the process of information searching, whether satisfied or dissatisfied with the actual outcomes. (Section 6.7.4.3) Dissatisfaction was often associated with problems in finding information required to meet coursework requirements (Section 6.7.4.4). Students find it difficult to separate a successful process, showing competence in information seeking from the outcome, which may or may not be successful (Section 6.7.4.5).

KEY QUESTIONS

How can students be encouraged to reflect on their information seeking skills?

How much practice is expected of students in using electronic information services? How are confidence and competence in e-learning intertwined?

RECOMMENDATION

Students' coursework and assignments should encourage them to reflect on their information searching, instead of seeing information searching just as an invisible means to an end.

A4.8 Induction and training in IT and information skills

Most institutions have a multi-pronged strategy, and students are difficult to persuade of the benefits of induction (Section 6.8.1) though some are more appreciative of follow-up training (Section 6.8.2). There is no 'one size fits all' solution to induction and training but there are lessons that may be learned across the sector (Section 6.8.3).

KEY QUESTIONS

Should aims of induction be minimal – an orientation to services?

What methods for information skills training are particularly effective?

What lessons can be learnt across the sector?

RECOMMENDATIONS

Orientation at the beginning of the programme should be tailored to specific needs at the time – nothing more, nothing less.

At orientation, students need advice on home access to EIS (as this allows the mature or the less confident students to practise at their own speed).

Follow-on training needs to be provided close to the point of need – graduated approaches are often successful.

While integration in the curriculum works well for many disciplines, other types of training support should be offered such as one-to-one help, leaflets, and special courses, as these are appreciated, and used by students.

Third (or fourth year) students can be used as 'demonstrators' for first year students, in colleges of higher education (particularly those with a teacher training department). Other institutions might employ research students to teach information skills and use of particular services.

Academic staff need to be consistent in their expectations of students on information skills – this is difficult to encourage in research intensive universities unless the department follows a problem-based learning, or ‘evidence-based’ curriculum

Formal staff-student consultation provides a mechanism to get feedback more directly from students

E-learning information skills packages are particularly important for the larger universities.

Large and diverse student cohorts are difficult to please universally, and for them information skill support mechanisms need to be varied and the timing is crucial. First year students may have high A-level grades but their IT skills may still be comparatively poor.

If library and information services staff such as subject librarians are not able to liaise personally with all the teaching staff in their subject area, VLE development offers one route to ensuring that they get their messages across. Interactive practice of information skills online is recommended.

A4.9 Development of intranets, institutional Web sites and VLEs

The data obtained was analysed to answer questions concerning:

- Student expectations (Do they expect all teaching staff to use the VLE in the same way?)
- Perceived benefits for learning (What are the benefits of such software - do the learning resources complement face-to-face teaching, effectively replace face-to-face teaching or are they an optional supplement?)
- Development of resources by staff (How do they see the VLEs helping and hindering their teaching, and how do they fit into the disciplinary patterns of scholarly communication?)

Findings from other JISC-funded research on managed and virtual learning environments was collated to provide a framework for discussing the emerging trends (Section 6.9.1).

KEY QUESTIONS

- How do students view learning with VLEs? (*Do they see VLEs as an extension of the individual teacher-student relationship? Is peer support made more effective?*) (Section 6.9.2)
- How do academic staff view VLE benefits or disbenefits? (*Is better monitoring an explicit objective? How important are the different learning styles of students, and how easy is it to adapt in light of experience during teaching the module?*) (Section 6.9.3)
- How do both staff and students view the policy issues concerning VLE development? (*Do they think that there should be a standard method for developing and using the VLE? How much variation in practice should be 'acceptable'? How important are the links between the learning and the student record of learning achievement?*) (Section 6.9.4)
- Are VLEs being used to reinforce information skills, with or without specific packages devised for that purpose? (*What are students doing with the information provided via the VLEs?*) (Section 6.9.5)

RECOMMENDATIONS

For students to view the VLE as an extension of the individual teacher-student relationship, teaching staff need to provide some interactive exercises, or some specific guidance on assignments or coursework. Otherwise the VLE is viewed on a 'take it or leave it' basis, a 'resource dump', and many students will not use it if there is no specific reason to do so.

There was little evidence that functions of VLEs which allow students to organise themselves for group learning were being used, or that student-student support mechanisms were encouraged.

For many teaching staff the first benefit of the VLE being used as a store for handouts and powerpoint presentations, is the time saved in photocopying for students.

Moving teaching staff beyond the 'resource dump' stage requires staff to shift from a lecture-dominated, 'class contact hour' model of teaching, to a model which explicitly encourages individualisation. This is easier to do in a discipline where students traditionally learn through doing problems and exercises.

VLE developers need to stress the benefits of adaptation during delivery (hiding course materials until the appropriate time), and the benefits of monitoring student learning.

Teachers need guidance in making provision for student peer-peer support via the VLE.

Increasingly, students may expect a minimum level of VLE support, though some variation in the nature of learning support from module to module is expected.

Many students like to be able to monitor their own learning and the MLE approach will be increasingly important.

All institutions with research active staff might have greater staff buy-in to the VLE if the VLE could be seen to support their research interests, and the integration of research into their teaching.

More recognition of the skills required to design and author e-learning materials is desirable.

Information evaluation exercises could be far more prominent in VLEs than they appear to be.

Instructions to avoid citing Web sources do not encourage students to practise appraisal of Web-based sources. The subject discipline will influence the type of skills required, but some students are getting conflicting messages about appropriate use of EIS and the Internet.

B1 Plans for JUSTEIS 2003/2004 (Cycle Five)

B1.1 Summary of changes to proposals tendered to JCALT for 2003/2004 (Cycle Five)

In response to the requests from JCALT to increase the focus on dissemination activities the following actions have been taken:

- dissemination plan drawn up by JUSTEIS and JUBILEE, together with JISC Communications and Marketing, Malcolm Batchelor, Sonja Bisset and Faye Gardiner
- reorganisation of responsibilities of the three main research staff among the proposed work packages
- assessment of the risks in withdrawing from all proposed action research projects (as requested by JCALT)

B1.2 Implications of changes for JUSTEIS 2003/2004 (Cycle Five)

Most of the requested changes can be accommodated, and we agree unreservedly that more focus needs to be placed on dissemination activities, as we have started to do in 2002/2003. It has been, for example, extremely useful to obtain feedback from all the JISC sub-committees (responses to the Briefing Papers) and to obtain feedback from the dissemination workshop. This has contributed to the analysis this year and some minor changes proposed to the survey instruments for next year.

The reorganisation of the responsibilities, putting more focus on dissemination, does pose some logistical problems for the team as many of the planned activities require administrative work 'at base'. The demands of the survey work out 'in the field' mean that it is impossible to guarantee adequate staff cover at the Aberystwyth base when required for organising and co-ordinating workshops, for example.

The JUSTEIS team therefore request an additional 5000.00 pounds from JCALT, to be allocated to the additional administration required for the dissemination activities. It should be pointed out that we have always tried to keep the administration and administrative costs down as much as possible, and the research team have shared the administration as we have found this the most efficient way of working. (see B2)

The proposed plan would permit reorganisation of the transcription duties, to give more time to one member of the research staff for administrative work. (see B2)

We have action research work pending as some of the planned activities for Cycle Four, with the best will in the world, could not be hurried at the sites negotiated in Cycle Four. It would clearly not be advantageous for JISC-funded researchers to withdraw abruptly from the fieldwork planned at those sites, and we believe we should carry on with planned activities there, but placing as much emphasis as possible on the dissemination and 'case study' exemplars that should be an outcome of the work at those sites.

B2 Revised funding proposal

Abbreviations

CHEST: Combined Higher Education Software Team

CI: critical incident (referring to critical incident technique)

C&IT Communication and information technology

CM: clinical medicine (disciplinary cluster)

CoFHE: Colleges of Further and Higher Education

CSF: critical success factors

CURL: Coalition of University Research Libraries

EIS: electronic information services (ICT based)

FE: further education

HA : Humanities and Arts (disciplinary cluster)

EIS: electronic information services

HEI: higher education institution

ILLs: Inter-library loans

ILT: information and learning technology

JUBILEE: companion project to JUSTEIS, undertaken by a team at University of Northumbria

LIS: Library and Information Services

LRC Learning Resource Centre

MAN: Metropolitan Area Network

MCQ: multiple choice question

ME: Maths and Engineering (disciplinary cluster)

NESLI: National Electronic Site Licence Initiative

NFAIS: National Federation of Abstracting and Indexing Services

PAS: Pure and Applied Science (disciplinary cluster)

PASS: Pure and Applied Social Sciences (disciplinary cluster)

PI: Performance Indicators

RSC Regional Support Centre

SCONUL: Standing Conference Of National and University Libraries

SPARC: Scholarly Publishing and Academic Resources Coalition

Main Report

1 Introduction

1.1 Aims and objectives

For Cycle Four, there were three work packages (WP):

- Monitoring framework (WP1)
- Action research (WP2)
- Data mining (WP3)

The aim of these was, as in previous cycles, to provide evidence of any trends in user behaviour, and to assess more fully the reasons for the trends in user behaviour.

1.1.1 Work package 1: monitoring framework

The aim of WP1 was to continue and consolidate the monitoring framework developed in Cycles One to Three. In Cycle Four the aim was to provide more emphasis on FE, and less on HE, with no change to the sampling approach used in previous cycles to ensure coverage of a wide range of institutions and disciplines.

Objectives were to:

- assess the uptake and use of EIS in a random sample of HE/FE institutions, to monitor trends and identify the possible triggers for change in user behaviour. (Strand A)
- identify the range of EIS offered through the LIS web sites in the HE/FE institutions that are the subject of Strand A (Strand C), plus a selection of other institutions
- identify searching strategies adopted by students and staff
- collect data on the context of information behaviour
- examine the factors and drivers which affect the EIS purchasing intentions of senior LIS staff.

1.1.2 Work package 2: action research

The aim of WP2 was to develop the action research methodology tested out in Cycle Three, and complement work being done by the JUBILEE team on action research. The aim is a better understanding of the levers and barriers associated with uptake and use of EIS in FE institutions.

1.1.3 Work package 3: data mining

WP3 aimed to provide a more in-depth analysis of data collected over the previous three Cycles. There was a considerable amount of rich data obtained from staff and student interviews which has not been explored in depth. Fuller analysis should identify more fully the lifestyle factors which affect student use of EIS. In view of the increasing number of HE students working part-time while undertaking their degree, plus the large numbers of FE students pursuing courses on a part-time or day release basis, the use of EIS, and support for use of EIS, should be seen within that wider context.

This work will be undertaken jointly with the JUBILEE team. JUSTEIS will focus largely on the student perspective, JUBILEE on academic staff and the information professionals.

1.1.4 Alterations in project work

Work package 1 proceeded as planned.

Work package 2 proceeded as planned although two of the action research projects need to be completed in Cycle Five as the organisations concerned could not proceed with the work in Cycle Four. Plans to hold regional workshops were put on hold, as the focus of the dissemination work shifted (at the request of JCALT) to work on the briefing papers and a Dissemination Day on June 10th, 2003.

Work package 3 proceeded as planned as far as the work to code and analyse the JUSTEIS interview was concerned. The work to be done jointly with JUBILEE has had to be postponed until Cycle Five as the staff responsible for some of the coding had to undertake the work on the briefing papers, which had not been part of the original proposal.

1.2 Project management

1.2.1 Project team

The project team directors remained the same as in Cycle Three, but there were changes to the research staff team.

The project team (and their responsibilities) comprised:

Directors

Chris Armstrong (CIQM, Information Automation Limited), Ray Lonsdale (UWA), Dr.Christine Urquhart (UWA)

Ray Lonsdale is also a non-executive director of Information Automation Limited.

Chris Armstrong (and CIQM) staff were responsible for Strand C, and both Ray Lonsdale and Chris Armstrong contribute to the preparation of the report (Strand A questionnaire analysis, mostly).

Dr.Christine Urquhart compiled the report, the briefing papers for the JISC sub-committees and liaises with the JUBILEE team.

Research officers

Siân Spink managed the action research element (work package 2) as well as undertaking Strand A interviews, associated transcribing and analysis, as well as some project administration.

Rhian Thomas managed Strand A user behaviour element (work package 1), as well as undertaking Strand A interviews, including the purchasing interviews, associated transcribing and analysis, as well as some Web site development.

Alison Yeoman managed the data mining element (work package 3) as well as undertaking Strand A interviews, and associated analysis.

Roger Fenton (CIQM, Information Automation Limited) (Strand A questionnaire data entry and analysis, also Strand C data collection and data entry)

Research assistants

Jane Durbin has done much of the transcribing work.

Janet Turner, and also Debbie Harris, have assisted with the transcribing.

1.2.2 Relationship of report to other deliverables for JUSTEIS, Cycle Four

This report incorporates:

- Strand A User behaviour and results of the interviews on EIS purchasing intentions (work package 1 except for the Web site survey)
- Action research studies (work package 2)
- Data mining (work package 3)

Strand C, Web site survey for work package 1 is contained in a separate report.

1.2.3 Advisory structure, liaison with JUBILEE team

Close contacts have been maintained with the JUBILEE team throughout the year. Towards the end of 2002, Malcolm Batchelor was appointed as the JISC contact for the two teams, and regular meetings held throughout the year with representatives from the teams. Malcolm Batchelor has also visited UWA to meet the JUSTEIS team.

Most of the liaison work has concerned dissemination activities, such as the production of briefing papers for JCALT and the other JISC sub-committees, planning of the dissemination event in June 2003, and planning of the dissemination programme for 2003/2004, with the JISC Communications and Marketing Team.

1.3 Dissemination activities for Cycle Four

The following sections discuss the formal dissemination activities. These have formed a greater proportion of activity in the current Cycle. See also Section 2.2.5.

1.3.1 Briefing papers for JISC sub-committees

Following completion of the first three cycles, a JCALT planning meeting on 29 October 2002, on the future of the M&E framework agreed that briefing papers on the findings would be prepared for each of the JISC sub-committees. Papers were drafted by Christine Urquhart, with help from Linda Banwell (for the JUBILEE team) and Malcolm Batchelor. The final versions of these papers (Appendices 1.1 to 1.6) were presented to the various sub-committees in the February meetings, 2003.

Highlights for Cycle Four (Appendix 1.7) were presented to JCALT in April 2003.

1.3.2 Dissemination day, 10 June 2003

A dissemination event was organised, largely by the JUBILEE team for 10 June 2003. This was held at Aston Villa conference centre. The JUSTEIS team invited all the staff (academic and LIS) contacts for Cycle Three and Cycle Four. The timescale was very short, given some delays in confirming the date of the event, but we were pleased that several of the academic staff contacts appeared, as one aim of the day had been to generate discussion between academic and library staff in the workshops. JUSTEIS organised workshops in the afternoon (Appendix 1.8).

1.3.3 Dissemination plans for 2003/2004 (Cycle Five)

A meeting on 22 July 2003 with the Head of JISC Communications and Marketing (Robert Haymon-Collins), project directors from the JUBILEE and JUSTEIS projects (Linda Banwell, Christine Urquhart), Malcolm Batchelor, Sonja Bisset and Faye Gardiner followed up a previous meeting on 4 July 2003, to produce a plan for dissemination activities and publications for 2003/2004.

1.3.4 Publications in 2002/2003

The following papers discuss JUSTEIS research methods and results. The team (as can be seen from the outlets) aim to publish in the professional journals, as well as the international peer-reviewed journals.

Banwell, Linda; Rowley, Jennifer, and Urquhart, Christine. Is e-learning the answer in FE? *Library + Information Update*. 2003; 2(4):50-51.

Bonthron, Karen; Urquhart, Christine; Thomas, Rhian; Armstrong, Chris; Ellis, David; Everitt, Jean; Fenton, Roger; Lonsdale, Ray; McDermott, Elizabeth; Morris, Helen; Phillips, Rebecca; Spink, Siân, and Yeoman, Alison. Trends in use of electronic journals in higher education in the UK - views of academic staff and students. *D-Lib Magazine*. 2003; 9(6):

<http://mirrored.ukoln.ac.uk/lis-journals/dlib/dlib/dlib/june03/urquhart/06urquhart.html>.

Urquhart, Christine; Light, Ann; Thomas, Rhian; Barker, Anne; Yeoman, Alison; Cooper,

Jan; Armstrong, Chris; Fenton, Roger; Lonsdale, Ray, and Spink, Siân. Critical incident technique and explicitation interviewing in studies of information behavior. *Library and Information Science Research*. 2003; 25(1):63-88.

Urquhart, Christine; Thomas, Rhian; Armstrong, Chris; Fenton, Roger; Lonsdale, Ray; Spink, Siân, and Yeoman, Alison. Uptake and use of electronic information services: trends in UK higher education from the JUSTEIS project. *Program*. 2003; 37(3):168-180.

The team also presented a paper at LIDA 2003 (Libraries in the Digital Age) entitled: "Adding value through library Web sites".

2 User behaviour (Strand A) in HE

2.1 Aims and objectives

The original aims for Strand A were established by the JISC in the original call and are:

- Strand A

To undertake a periodic survey of EIS uptake and use, investigating the quantity and quality of take up, with a view to bridging the gap between the perceptions and the reality of user behaviour.

Emphasis was placed, as in previous Cycles on obtaining interviews with students, with questionnaires used as a complementary method of data collection. Over the Cycles, the complementary JUBILEE project has focused on interviews with academic staff and LIS staff, with questionnaires used to survey students.

Where possible, data was collected on the use of MLEs or VLEs where these may be affecting use of EIS. Many institutions are now investing in VLEs and the focus on VLE usage in Cycle Four reflects the need to examine how VLE implementations might be affecting uptake of EIS. The Strand A work continued examination of the student perspective on LIS induction and information skills training.

2.2 Methods used in Cycle Four

Methods used were essentially a refinement of those developed in Cycle Three, which themselves consolidated experience gained in Cycles One and Two.

A sampling frame (Section 2.2.1) was used to ensure that a various types of institution were included, and a multi-stage cluster sampling approach used to provide a range of departments, more or less evenly split among the five disciplinary clusters, using the same cluster categorisation that had been used previously. The HEIs asked to participate were all new to the JUSTEIS project work.

The access methods used were the same as those adopted in Cycle Three. Research staff were alert to possible problems, most having gained experience of the likely problems in previous Cycles, and the approach taken at each institution was therefore adjusted quickly to suit the prevailing circumstances.

Survey methods were very similar to those refined during Cycle Three (Section 2.2.2), with the use of vignettes as a tool to examine preferred or habitual searching strategies.

The response rate was similar to that obtained in Cycle Three (Section 2.2.3).

Analysis combined qualitative and quantitative methods (Section 2.2.4).

Limitations are considered in Section 2.2.5 and implications for future survey work in HEIs considered in Section 2.2.6.

2.2.1 Sampling frame

In Cycle Four the aim was to provide more emphasis on FE, and less on HE, with no change to the sampling approach used in previous cycles to ensure coverage of a wide range of institutions and disciplines.

The proposed sample was HE (12-14 departments, 10-12 institutions)
 FE (16-20 departments, 12-14 institutions)

The survey of purchasing intentions was expanded in this Cycle to cover all institutions in the final survey sample.

Provisional target numbers of students per site: 8-10 interviews, 10-15 questionnaires per department (HE and FE)

Number of academic staff surveyed: 1-2 staff interviews/questionnaires (HE and FE)

Number of interviews of senior LIS staff: 1 per site (HE and FE)

The intention, as in previous Cycles has been to provide an acceptably representative sample by:

- geographical location (to appear fair to all UK HEIs)
- size of institution (by number of students)
- type of HEI (new, old Russell, old non-Russell, Colleges of Higher Education)
- department and discipline (although institutions cluster disciplines and departments in different ways)

The development of the sampling frame followed procedures used for Cycle One and Cycle Two (see Cycle One report, Sections 5.3.1.1 – 5.3.1.2 for details of the stratified sampling approach) and details of the sample are given in Appendices 2.1, 2.2. Institutions and departments that had participated in previous Cycles were eliminated from the sample, and care was taken to avoid clashes with JUBILEE sites.

It is difficult to apportion departments into disciplinary clusters when the departments are offering joint honours courses, the departments themselves may be multidisciplinary in approach, with the result that they might be found in the Arts and Humanities in one institution and Social Sciences in another. Restructuring in some institutions has led to very broadly based Faculties.

The final sampling frame was as follows:

Size of HEI (UG student numbers)	Old University Russell Group	Old University Non-Russell	New University	College of Higher Education
Large (>18,000 students)	2 Category 1	2 Category 2	2 Category 3	0
Medium (>6,000 <18,000 students)	1 Category 4	2 Category 5	2 Category 6	1 Category 7
Small (<6,000 students)	0	1 Category 8	1 Category 9	1 Category 10

Table 2.1 Sampling frame for JUSTEIS Cycle Four

Appendix 2.3 lists by subject discipline the HEIs included in the sample.

For Strand A, 10 HEIs participated, and it was possible to complete survey work at 9 (2 Old Russell, 1 Old Non-Russell, 4 New universities and 2 Colleges of Higher Education, and the sampling frame for the 15 HEIs originally approached included 6 Large (over 18,000 students), 6 Medium (> 6,000, and <18,000 students) and 3 Small (<6,000 students) HEIs.

Of the 21 departments originally approached, 3 PAS, 2 Maths and Engineering, 2 Pure and Applied Social Sciences, 3 Humanities and Arts and 2 Clinical Medicine departments participated in Cycle Four (12 in total).

2.2.2 Survey methods

The interview schedule (Appendix 2.4) was little changed from that used for Cycle Three. Some minor changes in wording and in categories were made to make it easier to use the same schedule for both FE and HE sites.

The interview of purchasing intentions, previously Strand C, has been integrated into Strand A in this Cycle.

The methods comprised:

- Critical incident interview, with use of a critical success factors technique and vignette (to assess use of EIS, attitudes towards EIS, awareness of EIS and searching strategies among students and staff). (Appendix 2.4 for interview schedule, Appendix 2.5 for sample vignettes).
- Critical incident questionnaire, with use of a critical success factors technique for students and academic staff (Appendix 2.6 students, Appendix 2.7 research and academic staff)
- Interviews with senior librarians provided details of their plans for purchasing EIS, and some of the problems and opportunities the change in resourcing offered (Appendix 4.1)

Vignettes were intended to provide realistic and appropriate information problem situations for the students. Academic staff were consulted wherever possible. Vignettes provided another perspective on the information seeking routines of students.

2.2.3 Response rate

Site code n=15	Student interviews (UG, including HE diploma n=75 PG n=13)	Staff questionnaires	Staff interviews	LIS purchasing (Strand C)	Postal and e-mail questionnaires (student)
106	6	5	0	0	3
107	18	3	1	0	41
108	10		1	0	14
112	10	2*	0	1	32*
113	13	3	2	0	17
116	0		0	0	
120	0		0	0	
122	9		0	0	
123	0		0	0	
125	0		0	0	
127	0		0	0	
132	0		0	0	
134	4		2	0	
135	5	2	0	1	11
136	13	4	2	1	38
TOTAL	88	19*	8	3	154*

*Includes 2 staff also enrolled as students

Table 2.2 Institutional response rate

Disciplinary cluster	Responses (HE)	% total HE responses
Pure and Applied Science (PAS)	54	28.0
Maths and Engineering (ME)	30	15.5
Pure and Applied Social Sciences (PASS)	40	20.7
Humanities and Arts (HA)	28	14.5
Clinical Medicine (CM)	41	21.2
TOTAL	193	100.0

Table 2.3 Disciplinary cluster response rate for questionnaire survey (staff and student)

The disciplinary response rate for the questionnaire survey is similar to that of Cycle Three, although there are proportionally fewer responses from the CM cluster in this Cycle, and more from the PASS, and PAS clusters.

2.2.4 Analysis methods

Interviews (both face to face and telephone) were transcribed and entered into a qualitative analysis software package (NUD*IST) for coding and further analysis. For Cycle Four the qualitative software package used, NUD*IST 6, was an upgraded version of the package used previously (NUD*IST 4).

Some additional pre-coding was done at the transcript stage to speed up the coding and analysis. A checklist (see Appendix 2.4, EIS checklist (2)) was devised to enable the transcribers to add these codes prior to entry into NUD*IST.

Quantitative data were extracted from the interview transcripts manually, and collated with the questionnaire SPSS output.

Questionnaire data were entered into an SPSS database, and tables produced. Statistical tests included simple chi-squared tests of association.

2.2.5 Limitations

Gaining access to sites is not getting any easier although the experience of the team means that access is not getting any more difficult.

A large amount of qualitative data is collected, and the data for Cycle Four 2002/2003, for example, cannot be fully analysed in time for a report to JCALT in September 2003. As user behaviour is not changing that rapidly, the analysis and reporting schema used this year (see below) has worked successfully. It combines retrospection with some prospective forecasting – route finding but looking carefully to check where the boulders are likely to be, and how you can hitch a lift to make faster progress.

September – January	Initial in-depth coding and analysis of previous Cycle's data
February – March	Discussion among team to consider possible trends
March	Publication of <i>Highlights</i> for JCALT
April – August	Further in-depth coding and analysis, informed by new trends and policy development

2.2.6 Implications for future monitoring

More institutions are likely to enquire about research ethics now, and in the next cycle we propose asking interviewees to sign a consent form, to make the terms and conditions of

the interview clear. Procedures will be cleared with the UWA Ethics Committee for Research Procedures.

Given the reduced size of the HE sample this Cycle, it is not surprising that the number of postgraduates in the sample is too small for meaningful quantitative analysis. As the analysis has indicated that some postgraduates (the research postgraduates) are likely to be contributing to the teaching in a department including development of learning materials for VLEs, and tutoring in information skills, we need to ensure that such activity is monitored. Standards for postgraduate research degree programmes are out for review at present², and transferable skills (para 11) and lack of preparation for teaching in academia (para 12) it would be useful to assess the situation from the postgraduate research student perspective in the next Cycle. One postgraduate interviewee in this cycle noted that they had prepared material for the Department's VLE – support and training for e-learning skills among this coming generation of research postgraduates should be monitored.

The different profile of responses obtained from the questionnaires and the interviews continue. In the next Cycle it may be better to concentrate on closed category questions for the questionnaire and omit some of the more open-ended questions, particularly the question which asks about frequently used EIS.

For higher education, the categories for the questions about information skills training and support need to be reviewed. The terminology varies between institutions and departments. Some institutions may refer to Key Skills, others to Professional Skills, or Transferable Skills. If we are monitoring the development of information evaluation skills then the category 'research skills' may also be appropriate in some department. Lastly, we have found that best practice in induction and training is to make the induction a simple orientation and training a more graduated programme. It is not therefore very useful to collect data on induction.

The next cycle should collect data on the extent to which students are using their own ISP connections.

2.3 Use of EIS by undergraduate students

Results for the questionnaire survey and interviews are presented alongside, but have not always been integrated for several reasons, e.g.

- Coding categories used for the questionnaire and interviews differ slightly (the preset categories for the qualitative analysis have to be more general as they cover both the HE and FE sector)

Comparisons are made between the current Cycle (Cycle Four) and those obtained the previous year (Cycle Three) where appropriate. Columns for Cycle Three data are italicised.

The sub-sections in this Section cover:

- purposes of EIS use (Section 2.3.1)
- patterns among sources used (Section 2.3.2)
- patterns of Web site use (Section 2.3.3)

Later Sections cover:

- use of EIS by postgraduates (Section 2.4)
- use of EIS by staff (Section 2.5)
- progression in information skills (Section 2.6)

² HEFCE and other funding councils. *Improving standards in postgraduate research degree programmes*. Formal consultation documents May 2003/23. Bristol: HEFCE.

- influences on student use of EIS (Section 2.7)
- information skills education and training (Section 2.8)
- e-learning and VLEs (Section 2.9).

Quotations from interview transcripts are included to illustrate the discussion. The format of the coding is as follows:

site code (two or three figures, followed by three figures to denote interviewee code number: 1** = student, 2** = library staff, 3** = academic staff, 4** = senior library staff.

2.3.1 Purposes of EIS use by undergraduates

Purpose (multiple responses allowed in questionnaire)	All UG students: interviews + questionnaires n = 218 (%)	Undergraduates: questionnaires n = 143 (%)	Undergraduates: interviews n = 75 (%)
Coursework	173 (79.3%)	115 (80.4%)	58 (77.3%)
Leisure/shopping	32 (14.7%)	21 (14.7%)	11 (14.7%)
Final project	27 (12.4%)	22 (15.4%)	5 (6.7%)
Work duties	6 (2.8%)	6 (4.2%)	0
Job search or application	6 (2.8%)	6 (4.2%)	0
Planning an event	2 (<1%)	2 (1.4%)	0
Research/funding proposal	1 (<1%)	1 (0.7%)	0
Business travel	1 (<1%)	1 (0.7%)	0
Other	3 (1.4%)	2 (1.4%)	1 (1.3%)
For someone else	0	0	0

Table 2.4 Undergraduates' reasons for seeking information in the critical incident

As in the previous three cycles, the primary purpose described in the critical incident considered in the survey is academic, to support coursework, and notably the final project. The proportion of leisure/shopping use described is very similar to that found in Cycle Three.

2.3.2 Finding information: use of EIS by undergraduates

The questionnaire and interview surveys both asked about the EIS frequently used by undergraduates. The interviewers used a checklist and could clarify queries, whereas the questionnaire merely asked students to list frequently used resources. This accounts for the fact that texting and mobile phones appear on the interview list, but not on the questionnaires. The difference in rank order, as well as the difference quantitatively suggest that the questionnaires under-represent actual frequency and awareness of EIS.

As the questionnaires are likely to under-represent the amount of use, rank order comparisons with the previous cycle probably provide a fairer comparison. Comparing questionnaire responses for Cycle Three with those of Cycle Four indicate some changes, e.g. higher rankings for the use of Own HEI Web sites (now ranked 2, as opposed to 5), and Databases (no host cited) (now 5, previously 8) and slightly lower rankings for OPAC (own HEI) (now 6, previously 4). Overall, the rank ordering is very similar between Cycle Three and Cycle Four.

Rank order (frequent use)	Undergraduates: questionnaires n = 127 (%)	Rank order (frequent use)	Undergraduates: interviews n = 75 (%, rounded up)	Rank order comparisons (previous cycle) interviews (%)
1	Search engines (79.5)	1	Search engines (96%)	2 (82%)
2	Own HEI Web site (23.6)	2	E-mail (95%) (E-mail personal 95% E-mail academic 87% E-mail discussion groups 16%)	1 (88%)
3	E-mail, newsgroups, etc. (22.8)	3	Texting (mobile phone) (89%)	<i>not coded</i>
4	E-journals (i.e., no e-journal collection specifically named by respondent) (13.4)	4	Own OPAC (83%)	3 (75%)
5	Databases (no host cited) via the Web (8.7)	5	E-journals (56%)	6 (51%)
6	OPAC (own HEI) (7.9)	6	Bibliographic databases (53%)	5
7	Other Web EIS (not listed elsewhere) (7.1)	7	Intranet courseware/VLE (47%) (Intranet lecturer notes 40% Intranet local information 40% Intranet student records 25%)	4 (Lecturers' home pages 51% VLE 36%)
8	JISC negotiated services (5.5)	8	CD-ROM (47%)	7
9	Another institutional Web site (not own HEI) (4.7)	9	E-reference (44%)	<i>(included in e- journal rank, 25%)</i>
10	Other named (non-JISC) database aggregator services (3.9)	10	Statistics software (33%)	9
11	Local EIS (CD-ROM, diskette, etc.) (3.1)	11	Gateways, portals (25%)	<i>(included in a database rank, 17%)</i>
11	Named e-journal collection (3.1)	12	Other HEI OPAC (17%)	
			Library subject tree (16%)	
			E-books (11%)	
			Internet via WAP phone (9%)	

Table 2.5 EIS used frequently by undergraduates

The interviews include mobile phone and texting for the first time this cycle. Allowing for this, the rank order is similar, overall, to that of the previous cycle. Quantitative comparison of some of the figures suggest that more students may be using search engines (in particular) as well as email (and texting) regularly. Comparing the actual component figures for VLE and departmental pages, there seems to be shift from lecturers' home pages to the VLE (as might be expected). The rank order for use of the OPAC, e-journals and bibliographic databases is similar. There appears to be an increase in the frequency of use of electronic reference material (difference of more than 10% in the frequency of use).

EIS	All UG students: interviews + questionnaires n = 211 %	UG: questionnaires n = 136 %	UGs: interviews n = 75 (includes HE Diploma) %
Search engines	78.7	84.6	68.0
Bibliographic databases, plus other specialist scientific databases and Web-based resources	23.2	19.1	30.7
Own HEI Web site / VLEs (not including OPAC)	12.3	16.2	5.3
E-journals and e-journal collections	8.1	9.6	5.3
Organisational and 'known' Web sites	6.6	3.7	12.0
OPAC (own HEI)	5.7	5.9	5.3
E-mail, newsgroups, etc.	1.4	2.9	
Other Web EIS (not listed elsewhere)		1.5	
Web text archive		1.5	
Web-based news resource		1.5	
Web-based one-stop shop		0.7	1.3
OPAC (other than own HEI)		0	1.3
Local EIS(CD-ROMs, etc.)		0.7	
E-monograph or .pdf file		0.7	
Online curriculum resource		0.7	
Full-text database		0.7	
Other EIS: Gateways, Publisher Web site, Own LIS subject tree, Web dataset, Current awareness or SDI service, Document supply service, Pre-print collection, Ready-reference Web resource		0	

Table 2.6 EIS used in the critical incident search by undergraduates

Once again, the questionnaire data for the critical incident echo the results for frequent use, with search engines at the top at 84.6% as opposed to 73.2% in 2002. In contrast to the responses from the previous cycle, there has been an increase in the incidence of use of databases for the critical incident (although JISC-negotiated databases are down). Similarly, the interview data indicate a higher use of databases, including specialist and more interactive databases. The lower sample numbers for HE students this year make valid comparisons with last year more difficult. That increase can possibly be attributed to the convenience of databases which offer added value services such as linking directly to journal articles (full text) or other specialist interactive services. It is full text, or a straight answer to the question that students want.

'I was doing reactions, organic reactions and I needed, well I first searched for journals and things on the Internet and then I needed some names for compounds so I used Beilstein online.' [108105, text units 14-17]

'So I went on to the Science Direct Web site which has all the electronic journals and downloads at least the abstracts, if not the full version. So I looked on that and then in there it has a search option...And it came up with 400 hits!' [107116, from text units 34-38]

There is little evidence that e-books are being used, although sections of e-books might prove popular on VLEs (provided copyright and licensing conditions can be met). If as the EBONI project³ suggests, some features of paper books need to be maintained in the e-book format, and electronic text needs to be easy to scan, then paper textbooks may continue to be cost-effective in the short to medium term.

Types of EIS used in search	Type of Critical Incident Search (n = 137)			
	A: Academic n = 111 %	B: Leisure n = 27 %	C: Admin. n = 2 %	E: Final project n = 23 %
Search eng.	82.9	92.6	100.0	91.3
Own Web	19.8	7.4	0	0
Web D'base	9.0	7.4	0	26.1
E-journals	9.0	3.7	0	4.3
Own OPAC	5.4	0	0	8.7
JISC-negotiated	7.2	3.7	0	8.7
Host	2.7	0	0	0
Inst. Web	1.8	11.1	0	0
E-mail	1.8	7.4	0	0
Web news	1.8	0	0	0
Local EIS	0.9	0	0	0
Tutorial	0.9	0	0	0
Text archive	0.9	0	0	4.3
E-book	0.9	0	0	0
Full-text	0.9	0	0	0
One-stop shop	0.9	0	0	0
Other web	0.9	3.7	0	0
Gateways	0	0	0	0
Other OPAC	0	0	0	0

Table 2.7: EIS used by undergraduates for specific purposes [questionnaire only].

Excludes respondents who did not answer all relevant questions. Respondents may appear in more than one category of CI search and more than one category of EIS used.

Key:

- A = Coursework: assignment, essay, project, class presentation, lab. report, background reading
 - B = Searching for employment or carrying out duties of employment; planning some leisure activity; online shopping; business travel
 - C = Administrative duties or planning a college/university event
 - [D = Bibliography or reference checking (This category was not available to undergraduate students as a possible response)]
 - E = Work connected with writing a dissertation/thesis, article/book for publication, or funding proposal
-
- 1 = Any electronic journal or journal collection
 - 2 = Any institutional or organizational Web site, other than those separately listed below
 - 3 = JISC-negotiated service
 - 4 = Other host or aggregator services
 - 5 = Other Web databases
 - 6 = Gateways
 - 7 = OPAC of own institution's LIS
 - 8 = Other OPAC
 - 9 = Own institution's Web site
 - 10 = E-mail or any e-mail-mediated service
 - 11 = Local EIS (CD-ROMs, etc.)
 - 12 = Internet search engines
 - 13 = Any web-based tutorial or other online curriculum resource

³ Wilson, Ruth, Landoni, Monica and Gibb, Forbes. The WEB Book experiments in electronic textbook design. *Journal of Documentation* 59 (4) (2003): 454-477.

- 14 = Any text archive of the Project Gutenberg type
- 15 = Any electronic monograph
- 16 = Any full-text database
- 17 = Any Web-based news resource
- 18 = Any Web one-stop shop
- 19 = Any electronic resource not included above

Table 2.7 shows the use of EIS for four broad categories of critical incident (questionnaire data only). It is evident that for both academic and leisure purposes, search engines still remain by far the most used EIS. As with previous cycles, it would appear that in general terms, the range of EIS used in each type of search is largely appropriate (although the degree to which search engines are used for academic purposes could be a cause for concern). Predictably, the degree of other EIS used for academic work is greater than for leisure.

2.3.3 Patterns of Web site use by undergraduates

This section considers some patterns of Web site use by undergraduates. Search engines are used for a variety of reasons, and the information seeking routines associated with them are considered in Section 2.6. This section considers some of the trends in search engine and Web site use among undergraduates.

Web sites often provide full text information. This preference for easy access to full text is reflected in the preference for e-journal collections and services which specifically provide full text, rather than a mixture of abstracts and full text.

'I just find that very confusing, I can't remember the name of it now, but I just find that very confusing, it's got like six or something providers and you go into some of them, you don't get full text, you get summaries and although summaries can be helpful...I have to go to [name] to get it. So I use EbscoHost because it's very clear, you look at it straightaway and it says full text service.' [134103, from text units 17-25]

Another trend is the growing reliance on organisational Web sites, as organisations, including government departments, publish on the Web. Many of the undergraduates turn to organisational Web sites for information, and search engines may be used (as noted in previous Cycles) to find organisational Web sites. It is perhaps now an expectation that professional and other educational organisations (such as the BBC) will provide a portal for information, and several undergraduates explained how they had used known Web sites in their search.

'For the last assignment I was looking for a particular article that I'd seen in a magazine. I knew it existed. I was looking via some American nursing Web sites.' [112102, text units 29-31]

'I was looking for attitudes towards the monarchy because that's my dissertation area and I'd heard that MORI had done quite a lot of research in that area so I went on to their Web site and searched, did an advanced search on monarchy attitudes, then it came up with relevant studies that had been done.' [113102, text units 12-16]

'I needed to buy tickets online. I had to find out which line it was. I wasn't sure. I think I just went on to the trainline.com.' [122104, text units 15-16]

'My first port of call was a local triathlon Web site...Went into their links...found nothing relevant...tried [name] club Web site.' [122105, from text units 14-18]

'We'd been given an Ordnance Survey Web site but I didn't think the maps were very good on it, so went onto Google.' [122108, text units 20-21]

'The shares market usually using the Internet to look for the price, like NASDAQ or FOOTsie or other markets. I usually access this information through the

Internet...I like to keep a close eye on what's happened.' [134101, from text units 8-13]

'I already knew a person who was doing research at the moment at [name]...so I first accessed their Web site and got their publications list, then I went on to Google and did a search to see if they have the publications actually online.' [136110, text units 32-37]

2.4 Use of EIS by postgraduates

The sample of postgraduate students recruited in this Cycle is too small to draw meaningful comparisons with previous Cycles (although the sample size of postgraduates has usually been fairly small).

2.4.1 Purposes of EIS use by postgraduates

Purpose	PG students: questionnaires n = 14*	PG interviews: n =13	
		PhD (n =6)	Taught masters (n =7)
Coursework	8	0	3
Dissertation/ thesis	4	4	2
Leisure/shopping/travel	3	0	0
Article for publication	1	0	0
Reference checking	2	1	1
Work duties	0	0	1
Research/funding proposal	0	0	0
For someone else	0	1	1
Other	0	0	0

* Includes five respondents also classed as academic staff

Table 2.8 Postgraduates' reasons for seeking information in the critical incident.

As might be predicted, the major difference between PG and UG profile of purposes (Table 2.8, Table 2.4) is the greater emphasis on research-related purposes.

2.4.2 Finding information: use of EIS by postgraduates

Rank order	Postgraduates: questionnaires n = 14 (%)	Rank order	Postgraduates: interviews n = 13 Frequency (%)	Postgraduates: interviews n=32 Cycle three rank order
1	Search engines (85.7)	1=	E-mail personal 13 (100%) E-mail academic 13 (100%)	1
2	E-mail, newsgroups, etc. (28.6)	2	Search engines 12 (92%)	2
3	Other Web EIS (not listed elsewhere) (21.4)	2=	Own OPAC 12 (92%)	3
3	Own HEI Web site (21.4)	3	Texting 11 (85%)	<i>not coded</i>
5	JISC negotiated services (14.3)	4	E-Journals 9 (69%)	4
5	Other institutional Web sites (not own HEI) (14.3)	5	Gateways 8 (62%)	7
5	OPAC (own HEI) (14.3)	5=	Bibliographic databases 8 (62%)	5
8	Other e-journals* (7.1)	6	Intranet local information 7 (54%)	6
8	Databases (non-hosted) via the Web (7.1)	7	E-mail discussion groups 5 (38%)	<i>(included in e-mail rank, 41%)</i>
10	Named e-journal collection (0)	8	E-reference 4 (31%)	
		9	OPAC (other HEI) 3 (23%)	
		Other lower ranked categories include	CD-ROM, Intranet lecturer pages, statistical software, WAP phone, Intranet student information/records, Intranet courseware/VLE Library subject tree / index	

Table 2.9 EIS used frequently by postgraduates

Comparing the rank order between Cycle Three and the current Cycle Four (interviews) (Table 2.9) there are no marked changes. A higher proportion of postgraduates may use electronic journals, compared to undergraduates (69% compared to 56%, interview

responses) and postgraduates also use e-mail discussion groups more frequently (38% compared to 16%, interview responses).

EIS	PG: questionnaires n = 13 %	PGs: interviews n = 13 %
Search engines	69.2	30.8
Databases and specialist Web resources	23.1	30.8
Own HEI Web site, VLEs	23.1	0.0
Organisational and known Web sites	15.4	15.4
OPAC (own HEI)	7.7	23.1
E-journals	15.4	7.7
Other OPAC	0.0	7.7
Email	0.0	7.7
Web dataset	7.7	0.0
Web-based news resource	7.7	0.0
Web One-stop shop	7.7	0.0

Table 2.10 EIS used in the critical incident search by postgraduates

As indicated, the sample is too small to make generalisations, but the postgraduates, as might be expected make use of specialist resources, as well as search engines.

'I use Google more because for me I believe that's where I can have academic material ... I went to the social sciences web site but it was still through Google anyway.' [113113, from text units 61-63]

Use may be focused on a few key resources, used regularly.

'Web of Science, that's about all I use, Web of Science and Beilstein.' [108101, text units 35-36]

'I used the, well first of all I searched the university library and I also searched the [name] library on line. I always use Medline out of habit even though it's not appropriate, and.. it's called AMED, and ASSIA.' [113110, text units 14-17]

Like the undergraduates, postgraduates also use the Internet to contact organisations.

'I was using the Internet yesterday to look to see if I could refer a little boy with dyspraxia to a special centre in [name]...I already had the Internet address and I just typed it in. Got the information, emailed them and they responded back the same day.' [113105, from text units 10-14]

Humanities and Arts postgraduates are using the Internet in different ways, as this student studying creative writing explained:

'At the end of this term, over the Christmas holiday we have a formally assessed piece of critical writing...when I get the essay title, there's going to be a lot of extra reading and probably doing most of that through the library, researching in the library and then ask online...Yes mostly or if there's a particular writer perhaps a web site, there maybe a chat room or a newsletter, so I can listen in to people discussing the writer, or ask more detailed questions of somebody who has kind of expert knowledge of the writer...I have [participated] from time to time but not a whole lot. I can see myself doing it [participating] certainly for this essay that's coming up.' [106106, from text units 81-93]

Other postgraduates were using information on the Web site to check details before contacting the organisation, or people who could be contacted via an organisation.

'I was looking to contact an author of a particular book and I wanted to contact him personally, but obviously...So I put his name in search engines because he may have been an academic...but the only thing that came up was his book...and so forth. Then I thought well I can contact the publishers, maybe they can put me on to him, so search engine for the publishers, got them, emailed them through their Web site, got a reply saying you can't contact him directly, but we can contact him for you. They contacted him and he wrote and I got the result I wanted.' [122103, from text units 19-28]

2.5 Use of EIS by academic and research staff

2.5.1 Use of EIS for particular information purposes by staff

The sample is too small to make generalisations, but the following extracts illustrate the type of purposes found this year.

'For one of my MSC students for a project they're doing for some background information which was, I suppose it was for them but also for me, I wanted to make sure that we had from the point of view of the methodology we had the equipment available that we were going to need.' [136302, text units 13-17]

'The most recent search that I've done had to do with my research so it was academic based...I used the, Copernic and I think there are 80 or 90 databases or search engines that itself uses to find information for you....I wouldn't have known about Copernic if I hadn't been informed by the colleagues at the library.' [108301, from text units 12-20]

2.5.2 Finding information

Academic staff are looking for material that is useful in learning – and as the following extracts illustrate some of those needs are quite individual.

'I was looking for a Greek text of Euripedes Trojan women and I used a Google search to find a website based in Greece which have a large range of Classical Greek texts in Greek font.... I knew the site was there but it was easier to do a Google search than to try and recollect it's exact address.' [107301, from text units 12-23]

'...general Microsoft one [search engine], also using other Web search engine, things like Google, Ask Jeeves...I wanted not only pictures of parasites which are quite easy to find, but the "That's horrible" type pictures that students really love...so it's putting in things like "gory pictures" and a little bit of lateral thinking...and I found some quite gory pictures.' [136301, from text units 212-226]

2.5.3 Use of EIS for communication and research

Some staff mentioned collaborative research working, and one mentioned student-student communication.

'Because I do primarily quantitative research so I use these different networks on the Web a lot and within Britain and Europe and abroad so it makes collaboration a lot easier.' [113301, text units 168-170]

'But we've also set up things like a Web site for psychology students to keep in touch and things like that and we are the developing sort of the research end of it, we're setting up links for the various research groups that we are working with outside the University so that they can be a part of a discussion about research.' [134302, text units 112-117]

Publications by academic staff may be easier to find via their own (or departmental Web sites). As a recent JISC-funded survey⁴ has noted, academic authors frequently do not realise that an exclusive licence does not necessarily grant them more rights than in normal assignation of copyright to a publisher. But self-archiving is becoming an expectation, not just among authors but among their audience.

'When I used Google I searched for the individual article, because often people have articles on their own web sites, personal web sites, and I thought well I'll give that a try because it's worked in the past. So I searched for this guy called Reinhard Brutner and his article was called lexical pragmatics, and sure enough I found that he had it in pdf format on his web site and then I downloaded that and printed it off. [122102, from text units 42-49]

2.6 Progression in information skills

Section 2.6.1 discusses one identified problem in students' information literacy, the lack of evaluative skills they show, their lack of critical appraisal. Students' habitual routines for solving routine information needs in studying are discussed in Section 2.6.2, and this Section covers their use of printed sources as well as electronic information. Section 2.6.3 discusses how (and if) students value the specialised services introduced to them by academic and LIS staff. Some of the factors which govern their own satisfaction, dissatisfaction and their perceptions of confidence in information seeking are considered in Section 2.6.4. Section 2.6.5 discusses the disciplinary differences observed.

2.6.1 Rationale for selecting resources

As discussed in previous Cycle reports, the reasons provided by interviewees give some clues about the information strategies they are adopting and the type of information skills they are practising. Previous reports note that students use search engines as a one-stop-shop to finding information, with the result that they rarely consider alternative strategies with different resources.

The SCONUL Seven Pillars of Information Literacy envisage a progression of skills:

- recognise information need
- distinguish ways of addressing gap
- construct strategies of locating
- locate and access
- compare and evaluate
- organise, apply and communicate
- synthesise and create

Using search engines means that students leapfrog from recognising the information need to locating and accessing information. A few students recognise that the Internet searching may not produce the best quality of information, and, as the following extract indicates, some students are specifically set assignments which expect them to evaluate Web sites, or other learning resources.

'It was set work for finding Web sites...we had a choice between doing a review of a journal or a review of a Web site...we change project each term...Basically it's just that you get introduced to the facilities available and kind of learn your way around the library and the computer.' [107116, from text units 21-27, 37-40]

Staff at the same institution note that students lack evaluative skills, although their basic IT skills are improving. Training and information skills support are discussed in more depth in Sections 2.8 and 2.9.

⁴ Gadd, Elizabeth, Oppenheim, Charles and Probets, Steve. RoMEO studies 1: the impact of copyright ownership on academic author self-archiving *Journal of Documentation* 59(3) (2003): 243-277.

'It's patchy. It is getting better. We continue to be frustrated by the fact that students seem to think, find it hard to get used to referencing information they have found...they're sometimes uncritical in their use of things they've found on the Internet. I think our students are now very skilled in searching for information on the Internet, but not always as skilled in evaluating sites when they find them.' [107301, from text units 94-102]

A final year student explained how experience helped in judging and evaluating Web sites and EIS.

'You kind of get a feel of the sites, like the medical sites. I tend to more or less go for well known organisations like the World Health Organisation and University web sites, because there is a lot of American University web sites that have a lot of information on the web so if you stick to more organisations and universities then you can't really go wrong. But then I use journals like PubMed and MEDLINE although that hasn't got whole articles on there, so you've got the abstract but I can go away and find the journal and stuff, so I do use the Internet to find journals.' [135104, text units 29-37]

2.6.2 Information seeking routines

As a way of checking how electronic information resources fitted into their normal, routine seeking for information for their studies, students were asked how they would answer a problem in their subject area (the problems varied according to the subject and level of study). This is the last part of the interview and in some cases (15 HE and FE students in total) it was not possible to complete this part of the research work.

Strategy	Trend	HE Students (Cycle Four) n=75	HE students (Cycle Three) n=143
Library & books 1st	Up	36	65
Internet 1st	slightly down	15	38
Internet Only	Down	2	15
Ask Someone		1	7
Course Notes		5	not coded
Organisations		3	11
Specialised EIS	Same	12	29
Intranet		3	2

Table 2.11 Strategy used for the vignette problem

The findings suggest undergraduates are still relying on books, in particular their course textbooks (See also Section 4.3.4). Perhaps the gloss is wearing off Internet usage, as proportionally fewer students this year were prepared to rely only on the Internet to answer routine course-related problems (Table 2.11). The numbers relying on Intranets and VLEs are too small to be reliable predictors but this is an aspect to be monitored carefully in future, as more course materials are mounted on VLEs.

For some students the minimally sufficient route is enough and they seen no reason to expand on their normal routine. The visible Web suffices, together with books. For others, books are the main resource, with Internet backup.

'Well, I normally go on to Yahoo and search through there. I very rarely use a specialist search engine like you know MedWeb [probably meaning MEDLINE] and a few others. They seem to be complex and never got into them. I normally get what I want out of books or basic search engines.' [107108, text units 10-14]

'The essay was about the formation of Mercia and Francia. And I used, well the Internet to gain articles on those areas in particular...Personally I tend not to

assign too much to articles I find on the Internet actually. So I will do this but generally I also cross reference with books or something like that.' [107115, from units 15-19]

Search engine use is the default search route for so many students but some could rationalise why they used some search engines and not others.

'I mean, we have just been told about Scirus, using that for the scientific information, but I've always kind of used Google and Altavista because they provide better information, because Ask Jeeves is a bit wishy washy, I find. You ask it a question but then it asks you questions back and it's not really what you want, so I mean, I think in the first year we were probably given a list of search engines and then probably highlighted the best, so I've just stuck with them really because they seem to give me the information I need.' [136108, from text units 20-28]

'All I want is a box that says search and enter, in terms of a general search, I mean for some specific searches I'd go to specific Web sites of choice, but for a general search I'd always go to Google for those two reasons, that it's quite powerful and it isn't 'busy'[visually overloaded]' [135103, from text units 43-47]

Some students' routines include specific databases, for certain purposes.

'For general searches I always use Google just because I found it quick and easy to use. When I'm looking for specific literature I use PubMed.' [107110, text units 33-35]

Other students can explain their rationale and approach used to search databases. The database is convenient to access and provides specific information.

'Last week actually I was looking for one of the assignments I'm doing. It's actually an evidence based assignment that we're doing a critique of research so I went on, let me think, I went onto the (name) website and went onto, through (name) onto CINHALL and through there selected some articles to use...Just because I find it quite useful and I can access it from home as well as from college and it gives me...good articles and I can also select what years I want to search.' [112103, from text units 12-15, 22-25]

This student appeared to dislike using the OPAC and preferred browsing in known sections of the library (as many FE students do, Section 6.6.1).

'In the first year you get given a tour of the library, you got told where everything is, but then when you come back in the second and third years they've moved it all, so you've got to try and re-find it all again, You need a better breakdown of your own like department section of it, like say within the area of science it's the nutrition section, this is the physiology section...they need to be more specific within the sections.' [136108, from text units 84-91]

2.6.3 Gaining familiarity with specialised services

Students need to be introduced to databases and other specialised services. As discussed later (Section 6.7) students need to be persuaded of the benefits of using these services, such as the greater specificity and quality of the results obtained.

'And so I used, there's an Internet search engine called Scirus.com which is specifically for scientific information which one of the lecturers recommended to use because it's very good at finding journal articles and it kind of sorts out things that are not relevant and just leaves you with a decent set of data.' [136105, text units 12-16]

'So basically after looking for them on the Web, the Google search engine, I decided it's easier to use a chemistry based Web engine. I use it [Chemweb.com] quite frequently now.' [108108, text units 30-32]

In the following instance awareness that there were e-journals available meant that the student could access the information they required, although the printed format was preferred.

'The proper paper journal was out so I went on the e-journals directory and looked it up. But it's a bit, it's easier to read a book than pages off the Internet so. But I did read through it...I think we were told about them before, but I've just found them on the site because it's got a link, e-journal directory.' [107114, from text units 14-26]

Some of the reasons put forward to support their choice indicate that they are grappling with the concepts of relevance (to them), reliability of the data provided, and the need to provide proper evidence for opinions expressed. The following student was aware of the need to cite evaluated information, and to avoid biased information, but the database (being American) provided information that might not be directly relevant to the UK context.

'It [CINAHL] was actually recommended to us at the beginning of the course of being the most, a lot of them are a bit, not that it's wrong with being Americanised, trustworthy information you can rely on the information that's there or backed up by British sort of. They're not selling you anything either, your know, it's all sort of research based. As long as it's backed up with research and stuff.' [112107, text units 31-36]

Disciplinary differences mean that some students, on joint honours courses for example, find it difficult to transfer searching skills acquired on one database to a database which may be structured in a slightly different way, and where the thesaurus terms may be completely different.

'I haven't had a formal training there, I think they assume if you've had it one side then you understand how to use it the other, which you don't because it's a completely different search engine of course and it's different journals to access and it's different codes.' [113101, text units 157-160]

For some students, membership of a professional organisation grants them access rights to e-journals and related services.

'I also go on the Nursing Standard because I'm a member of that so I go through the Nursing Standard Web site...you have to have a password to get on that.' [112103, text units 33-35]

This student (somewhat unusually among the interviewees) used both a database and a subject gateway, as a comprehensive (though specific) search was required.

'I found, to look for as much as possible, so even if I found good stuff on CINAHL which I did I would have used NMAP anyway.' [112110, text units 29-30]

2.6.4 Satisfaction and confidence in information seeking

Satisfaction with results	PAS n = 143 %	ME n = 53 %	PASS n = 107 %	HA n = 41 %	CM n = 41 %	All questionnaire respondents n = 385 %
Totally dissatisfied	4.2	7.5	1.9	7.3	9.8	4.9
Satisfied	74.8	66.0	78.5	75.6	65.9	73.8
Totally satisfied	21.0	26.4	19.6	17.1	24.4	21.3

Table 2.12 Satisfaction with search results among different disciplines (questionnaires)

There is no discernible difference between the questionnaire data for this cycle (Table 2.12) and the equivalent data last year. There is a slightly higher percentage of totally satisfied users in PAS and ME than last time. Interviewees, like the questionnaire

respondents were more likely to be satisfied than dissatisfied with their search results (Table 2.13)

Satisfaction with results	Interviewees (staff and students) n= 96 79.2% response
Totally dissatisfied (1)	1
Fairly dissatisfied (2)	8
Neither satisfied nor dissatisfied (3)	20
Satisfied (4)	27
Very satisfied (5)	20

Table 2.13 Satisfaction with search results (interviews)

2.6.4.1 Factors governing satisfaction and dissatisfaction

Research has in the past indicated that most non-information professionals consider a comprehensive search to be around 20-30 items, and the first couple of pages of an Internet search may then suffice.

'Like sometimes you'd put in something in and get like 1000 and something, you look through the first 20 and you think OK I'm not going to look through that I'll put in something else, and sometimes you come up with 2, but if you find the right term you tend to come up with about 30 which is a good number.' [134103, text units 42-46]

Finding something that could not be found elsewhere (lack of availability) makes EIS attractive.

'It was very helpful because there was a book I couldn't get actually, which was highly recommended for the essay and I was able to find notes on the book...I think it was quite a famous article so someone had taken the points, proved very helpful.' [107115, from text units 87-93]

Lack of specificity is a problem which leads to dissatisfaction.

'For that it was a lot harder because we have to sort of look up different techniques and stuff and sometimes especially with abbreviations, like for a techniques for biology it's called ELISA and you put that in and you get people like Elisa Donovan and other things which are totally irrelevant.' [135101, text units 78-84]

2.6.4.2 Reflection on information seeking processes and confidence

Some students need to feel confident in using different types of information, and just as some need weaning from the Internet, others need support in using resources other than books.

'Well, I found with my earlier assignments I was just using books but this past year I've tried to use more evidence from articles and from the Internet itself...I had more confidence doing it then.' [11201, from text units 23-31]

2.6.5 Disciplinary differences

Purpose of CI search of reporting HE students	Subject Discipline (% reporting named purpose)					
	PAS n = 50 %	ME n = 29 %	PASS n = 19 %	HA n = 23 %	CM n = 38 %	All reporting HE students n = 159 %
Coursework	82.0	72.4	94.7	60.9	81.6	78.6
Leisure/shopping	22.0	6.9	26.3	8.7	2.6	15.1
Final project	22.0	6.9	0	26.1	10.5	16.4
Work duties	6.0	3.4	0	4.3	2.6	3.8
Job search or application	4.0	3.4	0	4.3	2.6	3.8
Research/funding proposal	2.0	0	0	0	0	0.6
Planning an event*	0	6.9	0	0	0	1.3
Business travel	0	3.4	0	0	0	0.6
Article for publication	2.0	0	0	0	0	0.6
Reference checking**	2.0	0	0	4.3	0	1.3
Other	0	3.4	0	0	2.6	1.3

* Category not available to research post graduates

** Category not available to undergraduates or taught post graduates

Table 2.14 Purpose of information search in critical incident for different disciplines

Notes: questionnaire responses only (columns may total more than 100% because multiple responses were permitted).

The same discipline clusters have been used in all three cycles. For convenience, these will be referred to by their initial letters in the report:

- PAS (Pure and Applied Sciences)
- ME (Maths and Engineering)
- PASS (Pure and Applied Social Sciences)
- HA (Humanities and Arts)
- CM (Clinical Medicine - including Medicine, Nursing and Allied Health)

EIS used by reporting HE students	Subject Discipline (% reporting frequent EIS use)					
	PAS n = 36 %	ME n = 28 %	PASS n = 19 %	HA n = 21 %	CM n = 38 %	All reporting HE students n = 142
Search engines	80.6	82.1	89.5	71.4	76.3	79.6
E-mail, newsgroups, etc.	25.0	35.7	15.8	23.8	18.4	23.9
Own HEI Web site	22.2	28.6	10.5	33.3	21.1	23.2
Other e-journals*	5.6	3.6	10.5	4.8	31.6	12.7
Databases (non-hosted) via the Web	11.1	0	0	4.8	21.1	9.2
OPAC (own HEI)	0	0	5.3	28.6	13.2	8.5
JISC negotiated services	8.3	0	0	4.8	13.2	6.3
Other institutional Web sites (not own HEI)	8.3	3.6	5.3	4.8	5.3	5.6
Web-based Ready-reference resource**	0	7.1	5.3	4.8	2.6	3.5
Other (non-JISC) host-provided database	0	0	5.3	0	10.5	3.5
Local EIS (CD-ROMs, etc.)	2.8	3.6	0	4.8	2.6	2.8
Named e-journal collection	0	3.6	0	4.8	5.3	2.8
Other Web EIS (not listed elsewhere)	0	0	15.8	0	0	2.1
E-monograph or .pdf file	0	0	0	14.3	0	2.1
OPAC (other than own HEI)	0	0	0	4.8	2.6	1.4
Web text archive	0	0	0	9.5	0	1.4
Web-based new resource**	0	0	10.5	0	0	1.4
Web-based One-stop shop resource**	2.8	0	0	0	2.6	1.4
Named database, but mode of supply unknown	0	0	0	4.8	0	0.7
Gateways	0	0	0	0	2.6	0.7
Web dataset	0	0	0	0	0	0
Publisher Web site	0	0	0	0	0	0
Own LIS subject tree	0	0	0	0	0	0
Current awareness or SDI service	0	0	0	0	0	0
Document supply service	0	0	0	0	0	0
Pre-print collection	0	0	0	0	0	0
Electronic collection management service	0	0	0	0	0	0
Respondent stated no EIS are regularly used	0	3.6	0	0	0	0.7

*i.e., no aggregator service named. ** Category counted under "Other Web EIS" in previous cycles.

Table 2.15 EIS frequently used by HE students in different disciplines (questionnaires)

EIS used by UG student interviewees	PAS n = 9 %	ME n = 5 %	PASS n = 15 %	HA n = 18 %	CM n = 28 %
Search engines	9 (100%)	5 (100%)	14 (93%)	17 (94%)	27 (96%)
E-mail personal	8 (89%)	5 (100%)	14 (93%)	17 (94%)	27 (96%)
Texting	9 (100%)	5 (100%)	9 (60%)	17 (94%)	27 (96%)
Email academic	8 (89%)	5 (100%)	13 (87%)	15 (83%)	24 (86%)
Own OPAC	8 (89%)	4 (80%)	13 (87%)	15 (83%)	22 (79%)
E-journals	2 (22%)	1 (20%)	14 (93%)	3 (17%)	22 (79%)
Bibliographic databases	2 (22%)	1 (20%)	11 (73%)	2 (11%)	24 (86%)
CD ROM	4 (44%)	3 (60%)	5 (33%)	8 (44%)	15 (54%)
Intranet courseware /VLE	0	3 (60%)	4 (27%)	11 (61%)	17 (61%)
E-reference	7 (78%)	4 (80%)	7 (47%)	9 (50%)	6 (21%)
Intranet local information	3 (33%)	1 (20%)	4 (27%)	5 (28%)	17 (61%)
Intranet Lecturer /course notes	5 (56%)	0	6 (40%)	5 (28%)	14 (50%)
Statistical software	4 (44%)	4 (80%)	13 (87%)	0	4 (14%)
Intranet student records	2 (22%)	1 (20%)	4 (27%)	2 (11%)	10 (36%)
Gateways	4 (44%)	1 (20%)	4 (27%)	1 (6%)	9 (32%)

Table 2.16 EIS used frequently by undergraduates in different disciplines (interviews)

As indicated above, Humanities and Arts students are likely to rely on the OPAC, although only the questionnaire data (Table 2.15) indicates a marked difference compared to other disciplinary clusters. Their searching and working routines may be based more around physical use of the Library, as this student explained.

'I went to the library and I pulled out those books and made some notes...the library system here is fantastic. It's a very, very well stocked library. It's very, very well organised, they're nice helpful people...I went there at about six, most of the students had hit the bar by then or had gone home, so it was really quiet...So I went into one of the computer rooms off the library and wrote my little piece and emailed it [home] from my college email address.' [106101, from text units 14-27]

As discussed earlier (Section 2.3) the questionnaire responses probably under-represent the frequency of use of certain EIS, and a sub-group analysis needs to be considered with caution. In addition, students doing joint honours degrees, or major/minor combinations can blur the picture, as they can only be put into one category for the analysis. From the interviews, there is greater use of e-journals among the pure and applied social sciences, and the clinical medicine group, and similarly these two disciplinary clusters make more use of bibliographic databases. However the sub-groups are very small, and some anomalies are likely to occur. It seems hard to explain why PASS students should text any less than other disciplines, or similarly why clinical medicine students should make less use of e-reference material than other disciplines.

2.7 Influences on student use of EIS

2.7.1 Influences on undergraduate use of EIS

Factors leading to EIS use	UGs: questionnaires n = 143 %
Own previous experience and results	69.9
Lecturer or tutor recommendation	31.5
Friend or colleague recommendation	14.7
Reading list	7.7
Course or session organized by LIS or IT services	7.0
LIS or IT services staff advice	7.7
Read about it	4.9
Course Website	3.5
Other	0.7
No response/data	0

Table 2.17 Factors leading to undergraduates' use of EIS for the critical incident (questionnaire)

The questionnaire data show a similar pattern to that of previous Cycles, with the students' previous experience the main reason for selecting the EIS used. More analysis of influences on student use of EIS will be done on the interview data during the data mining in Cycle Five. For discussion of influences on student use of EIS see Section 6.6.

Habit, influenced by previous successful use of a search engine, may prevail, particularly if that seems to be the expected norm.

'I don't really know to be honest. A lot of the lecturers seem to for science things I normally find Google's normally a little bit more sort of specific I think, I've tried Yahoo and that's pretty much the same thing but sometimes Google comes up with a bit more scientific stuff.' [135101, text units 12-16]

'I just find Yahoo's the easiest. It's not short listed on your menu on the college Intranet but I normally prefer to use it than Google because I find it's better...unless I know a Web site or I've been given a Web site on the assignment brief.' [136101, text units 15-17, 54-55]

'Just because when we got the Internet at home, at my term time address that [Lycos] was the search engine that I was taught to use really so I just keep using it. I know there are other ones but I just stuck with that one really.' [107113, text units 39-42]

Academic staff provide specific recommendations as well, as do friends and colleagues.

Some of this advice from academic staff appears to be informally provided – a 'you should read this' recommendation. Interestingly, many of the sites in which students reflected on informal advice provided by academic staff were also those where formal training was provided as well.

'It's usually general but recently they've been giving us exact author names. And a lot of them have been saying one book so then you'd go and look and type in.' [107103, text units 122-124]

'Oh yeah, I mean whoever is looking after us tells us like you know this is quite a good site and this is quite a good journal.' [107109, text units 113-114]

'Um yes, earlier this year we had um a lecture about how to find specific journals and stuff...in our particular module, I don't know if everybody got it...it was one of the course tutors for that module.' [107110, from text units 105-115]

'Because one of our research assistants said it was quite a good place to look so that's where I went.' [108104, text units 30-31]

'There were about er ten compounds that I needed names for. Some of them I just put in the structure, searched for and they came up. And then others I had problems finding because they hadn't been sort of referenced previously so I had a word with my teacher and she said there was a function called Alter Name on it so I had to go on and use that.' [108105, text units 22-27]

In other disciplines (archaeology, in the example below) students respond to the variety of prompts provided through training and support (see Section 2.8).

'For some of our project lessons we had to use the Internet quite a lot and they give us handouts with which search engines to use and things like that.' [107113, text units 127-129]

2.8 Information skills education and training

Students receive formal information skills support in a variety of ways (Section 2.8.1). Their views on the value of that support reveal that graduated support, at least in some disciplines is effective (Section 2.8.2). Some HEIs are adopting a more formal approach, Key Skills (or Professional Skills) to information skills support and the pros and cons of this are briefly considered in Section 2.8.3. The staff perspective is considered in Section 2.8.4. Often, there may a departmental or institutional strategy (e.g. for learning and teaching) which affects the type of model of information skills support observed (Section 2.8.5). Staff training is now high on the political agenda, and views on information skills training support for staff are set out in Section 2.8.6.

2.8.1 Sources of information skills training

	UG Students: Questionnaires n = 143 %	PG Students: Questionnaires n = 14* %	UG students Questionnaires Cycle 3 n = 311 %
Any form of training	83.9	78.6	82.6
Key Skills training	0.7	-	not asked
LIS/IT induction session	68.5	57.1	74.0
Course tutor	37.8	21.4	33.4
LIS/IT specialist session	21.7	42.9	10.6
Informal help from LIS staff	21.7	0	not asked
Specialist external consultant	0	7.1	2.6
Other training	1.4	14.3	2.6
No training	16.1	21.4	17.4

* Includes five respondents also classed as academic staff

Table 2.18 Information skills training undertaken by undergraduates and postgraduates (questionnaires)

Two extra categories were added to the questionnaire in Cycle Four (Table 2.18) – Key Skills training and Informal help from LIS staff. There is (slightly) more emphasis on formal training in this, and more postgraduates reported receiving training (although the sample of postgraduates is small). Key Skills training has not penetrated the HE sector fully, and Table 2.19 indicates that provision of such training (under that title, at least) is exclusively within the new university and colleges of higher education sector. (For further discussion of information skills training and support see Sections 6.7 and 6.8)

Postgraduates, particularly overseas students, may need good support, and careful monitoring.

I've had the basic training. There was training organised for postgraduates in social science, so we were taken to the library and shown for about 3 hours the basics to search for the stuff that we want. That was sufficient for starters.... I think there are some of these [resources] that I consider, I think that has a lot to do with me, I must confess I have a phobia from the beginning so I'm taking this little by little, but I realise that I'm actually lagging behind.' [113112, text units 77-80, 150-153]

Type of training (questionnaire responses)	Type of institution				All students n = 344 %
	CFE n = 194 %	ORU n = 40 %	ONRU n = 10 %	NU/CHE n = 100 %	
Any form of training	72.7	95.0	80.0	79.0	77.3
Key Skills training	45.9	0	0	1.0	26.2
LIS/IT induction session	41.2	80.0	70.0	67.0	54.1
Informal help from LIS staff	22.2	37.5	40.0	23.0	22.1
Training from course tutor	18.0	57.5	40.0	30.0	26.7
LIS/IT specialist session	1.5	40.0	40.0	15.0	11.0
Specialist external consultant	0	0	0	1.0	0.3
Other training	2.1	0	10.0	3.0	2.3
No training	25.8	5.0	20.0	21.0	21.8

CFE = Colleges of further education (10 institutions responding)

ORU = Old Russell universities (2 institutions responding)

ONRU = Old non-Russell universities (5 institutions responding)

NU/CHE = New universities and Colleges of higher education (7 institutions responding)

Table 2.19 Sources of information skills training for students, by institution type (questionnaires)

Although, from this table, it appears that Old Russell universities do better on training provision, it must also be borne in mind that the sample is small (2 HEIs only) and that disciplinary influences (as discussed in the Cycle Three report) need to be taken into account.

As discussed in Section 6.8, induction sessions are best considered as orientation sessions, with emphasis on the provision of personal advice when required. The difficulty with the voluntary approach is that students who may need help do not request it. Possibly reinforcing the message via academic staff helps.

'I think there wasn't so much of an emphasis on the technical how-to-do things on the tour, we were just kind of told if you need help there is someone there to help you.' [106106, text units 29-31]

'We had a library induction...in the lecture theatre it was talked through but no actual sort of hands on...But I think our project lecturer [name] said that you know if you felt you needed it then it was definitely available. You just had to request it...I know there's a couple of people I live with who weren't computer literate and went and asked and they've been given it.' [107113, from text units 135-145]

2.8.2 Student perspective on information skills training and support

As indicated in Section 6.8.2 graduated or integrated approaches to information skills training and support are liked by many students. Perhaps they find it easier to assimilate the advice and guidance into their learning for the subject area.

'I can't remember whether it was first year or second year. We've had a set of modules about computer skills and personal skills and we had everything from Excel databases to...we had at least a couple of mornings in the library with our chemistry assistant in the library...and there were about ten of use and we did things like Beilstein online and then he gave us a pack to search through...it was good we had a pack...the problem was because of the nature of the course, we didn't use it straight away, which was a bit of a shame. We used it in the third year for writing up practicals...But it was very useful and we had the packs to go

back to but obviously you have to refresh yourself. [108102, from text units 114-123, 136-141]

'We've been taught in our first year. It was one of the first things we were taught in college. We went through all the databases, the Cochrane Library as well, and how to use them at college...we got a big booklet to refer back to...very useful...we had another refresher course at the beginning of the second year as well which was quite useful.' [112104, from text units 24-32]

Group work provides an opportunity for students to learn from each other, but there is a tendency for students to take the easy way out and divide up the tasks according to the existing skills of the group.

'I have enough to get me by and buy shoes online and that's all I really need to know...Um one of our projects has to be presented as a Web page. But it's group work...so you can assign making of the Web page to someone who is able to do it...it's a wide division of sources and abilities within a group so some people tend to use books more and library catalogues, but other people do use the Internet for most of their research.' [107118, from text units 114-116, 122-136]

Practice, hands-on training, is appreciated by some students who need to learn by doing.

'We have like in Professional Skills, we were taken to the computer room and we just sat there and he talked to us...it was just very general and I think there might have been more hands-on approach, you know find out for yourself, you know make your own mistakes and whatever in the end.' [108108, from text units 133-141]

Consolidation of learning also helps.

'Yes they do from sort of day one, so I suppose that's what sticks in your head, I suppose.' [134104, text units 18-19]

2.8.3 Key skills (IT) and information skills

Some institutions adopt a formal approach to IT/information skills training. As noted in previous Cycles (see also Section 6.7, 6.8) formal training is more common among the clinical, biomedical and physical science disciplines. Such training may start in the first term.

'This was first term. Because we've got an IT module so we had to do it anyway...they showed us, we've got a Web page called, oh what's it called, MEDLINE, and it's more specific than journals and stuff like that...we had to hand in work, like Powerpoint we had to do a presentation in, we had to email it to the department...and that was part of our assessment.' [107105, from text units 93-108]

Some institutions adopt a graduated approach which some students at least appreciate and view as relevant.

'Loads, everything, they've taught us to use Beilstein, Web of Science...how to look up foreign journals, they've been really good...It's sort of ongoing really, mostly in the first year, I think we might have had a little bit in the second year...It's in the Personal Professional and Transferable Skills module which I think they have at least once a year...One of the lecturers is from the library and the others, there are about three of them, that are from the department.' [108109, from text units 96-100, 102-103, 109-111, 121-122]

Other institutions may be wary of forcing students to do something they don't view as relevant, or which they fear – and the following student acknowledged that attitude problems exist.

'We had lectures in the first year about using electronic resources, not just the Internet and stuff like that but how to do Powerpoint and Excel and all those sorts

of things. Unfortunately because I'd gone into it with a negative view to start off with I wasn't as open to it, I don't suppose, as people who were more familiar with computers, a lot of it just went straight over my head and made me frustrated.' [136107, text units 91-97]

2.8.4 Staff views of students' information skills support

From the perspective of academic staff, the subject needs are important, but information skills may be viewed as an important part of the ways students should approach their learning in that subject (also termed 'ways of thinking and practice', see Section 6.6.2).

The following lecturer discussed the need for first year students to have a practical grounding in searching for information for their coursework, followed in the second year by research methods training which focuses on how to use information and in the third year there are voluntary sessions for students wishing additional support for searching for their dissertation.

'First term first year, it's very structured...exercises that they have to use, demonstrate their skills...based on some searches they need to show evidence that – what they've searched and what they've found...

In the second year they do research methods which requires them to learn how to use information. They need to learn how to design a survey, they need to know how to use SPSS too, do some basic statistical analysis...they need to go and look at Web sites, Question Bank, ESRC Data Archive..

'The following year when it comes to dissertation – we lay on a couple of sessions again for dissertation students and they have a topic and this is how we go about these other sources. Again [name of librarian] runs those.

I think the environment has already created 'this is how you learn' ...it takes that big shift, and once that shift is made and everything is much easier and luckily we've already built up that culture.' [113301, from text units 47-56, 67-70, 74-78, 114-119]

Other disciplines (such as psychology) also emphasise research training throughout the undergraduate years, and the need to ensure that the culture is inculcated from the first year, to ensure that students make proper use of VLEs.

'Research methods modules run throughout the first year and the second year and they are designed just to build on the foundations of research.. and what we're doing because we've revised the course and the new current first year, we're getting the first year of the new course which has that inbuilt training so hopefully as they go through the course we'll develop a culture in the students used to using those sorts of things.' [134302, text units 98-100, 127-130]

As another academic reflected, students do not just need to be taught information retrieval they need to be taught to think in a different way.

'It's difficult to teach, you can either do it or you can't, that's what I see in the students, they can either think that way and find the information or they're very set in the ways that they think and they find it very difficult.' [136301, text units 248-251]

Ideally, perhaps, information skills support start at day one but, as one lecturer admitted, this means that all lecturers teaching first years need to be reinforcing the same messages and sometimes that is easier said than done. Interesting and attractive e-learning materials, relevant to the subject area might help.

'One of the problems is making sure that the other staff in other modules are using the material we are teaching. If we're teaching the referencing system we use in the college, if we have lecturers who aren't using that system that's where

we run into problems...There's no getting away from it, it's very dry material and students don't like it, they don't like doing four hours a week of it and there was a general grumbling last year, could it be done more in an e-learning type experience...[in] the second year's lesson...and they'll say yes, I'm glad we did it, it was important, we should pay more attention. You just can't get that through to the first years unfortunately.' [136301, from text units 60-83]

Even for some postgraduates, some active intervention is necessary, as formative support before students hand in the assignment. Feedback is more likely to be acted on at this stage, as it is too late once the assignment is submitted.

'There are 20 MSc students in this group...and they've had to show me a one page draft of the some of the main references they're using...and you know I was making sure they were all using various stuff from the Internet. They were given a whole page of suggested Web sites that would be useful.' [136302, from text units 76-82]

2.8.5 Different organisational models

As discussed later (Section 6.8.3) different departmental approaches to information skills support and training have been identified in previous cycles of JUSTEIS. These are:

- Model One: Follow my leader (sole IT enthusiast in the department, other colleagues of a wide range of skills)
- Model 2: Free market – laissez faire (staff aware and 'doing their own thing', little evidence of central direction)
- Model 3: Collective –team push (integration of information skills into the curriculum, strategic direction)

Over the years, the effect of teaching quality assessment, emphasis on developing programme specifications, plus the central and departmental planning that must go into developing VLEs should mean that Model 3 should be more prevalent.

Comparing the results of Cycle Two with those obtained last year for Cycle Three suggested that the main effect might be the type of teaching and learning methods adopted by the department. Departments (usually medicine, nursing and biomedical sciences) which had adopted a problem based learning curriculum were most likely to be Model 3. For other departments, Model One was less evident in Cycle Three, though the IT enthusiast of Cycle Two may now be spearheading VLE development in the department. Model 2 was more likely to be found in Old Russell universities (apart from the clinical science departments and those where evidence based practice is required), but the effect of government policies to improve learning and teaching should mean that many departments are shifting towards Model 3. Research requirements on staff do mean that some academic staff, and their departments, see teaching as secondary to research in the scale of priorities.

In this Cycle there is a mixed picture, and the sample is smaller than in Cycle Four. There seems to be more evidence of Model 3 some of the Old Russell universities, and conversely, some evidence that research priorities are important for staff in some New universities.

For example, this member of staff in an old Russell university explained a structured approach to IT skills, starting in the first year.

'In the first year all of our students complete an IT and computer experience questionnaire so we identify whether they're people who need basic training in using the Internet, using search engines, using email all the rest of it. And those who do are given their training...I think the time has come for us revisit this and...set the threshold a bit higher.' [107301, from text units 105-112]

From a member of staff in a New University, the levers for change are likely to emerge from research:

'I mean there are new things swimming into our ken like Blackboard, and I go Blackboard, what's that? I do need a certain amount of prodding and leading by the hand...I feel it's partly a sense of inertia and partly it's I know what I've got to, and I know where I'm going with my research project...I'm perfectly happy getting on a bus and going to [name of other large HE library] and burying myself in the library. That's worked well for the past 150 years and part of me says you know why bother to change? Another part of me says that when I email leading authorities in America or Europe on a research project that I'm doing and they immediately email back I feel I'm on to something here.' [134301, from text units 112-124]

In this New University, responsibility for the exercises for training sessions has been shared by academic and LIS staff.

'The first term they have IT exercises, but also in other times they have information IT helpdesk sessions at the library throughout the first year...I was astounded how much [subject librarian name] puts in to actually help students...I was involved in designing that exercise years ago and so...I don't know how much she's changed it now.' [113301, from text units 29-51]

In a College of Higher Education, nursing and midwifery students obtain structured training from the start of their programme.

'Because we had good training when we started. We had a librarian who showed us...there's some quite good information leaflets...we're doing an evidence practice module now.' [112103, from text units 73-74, 95]

'There's a student support [in the library] – they give you help if you're not sure what the questions are, you go along and they try and break down your assignments for you if you are having a bit of a problem in reflection.' [112106, from text units 104-109]

2.8.6 Training received by staff

One academic mentioned how the PG Certificate in Learning and Teaching in Higher Education had provided support in use of EIS, with some emphasis on how staff might influence student use of EIS.

'This was three years ago. It was led by a member of staff from Information Services who talked about the different networked and non-networked databases and other information sources to which we have access...The level of how easy it is for students to access them, the kind of advice we might give students about accessing them...one of the essays that you're required to write for this is about designing a course and planning the learning resources, assessing and evaluating the potential for the use of C&IT.' [107301, from text units 66-73, 86-90]

Other staff noted that they received notification of new versions of databases and training would be offered or organised on request.

'For example, when Belstein Online got upgraded then there would be an invitation to go to one of these sessions. Or you can initiate one with the librarian and say there is a new database, can you provide training for you know ten postgraduates and you know five academics. And that works well.' [108301, text units 84-88]

Others prefer experiential learning, picking up tips as they go along, and learning from students as well (in small CHE)

'No, I think it's mainly self taught...and as technology, the Internet and things have got more complex, it's just been a case of word of mouth and having the time to practise and just have a play really...I haven't done my computer European driving licence, a bad attitude really maybe but I think I can do it all, why do I need a bit of paper...occasionally you pick up tips...and you learn through teaching as well, the students occasionally have a shortcut of doing something.' [136301, from text units 366-384]

2.9 E-learning and VLEs

Benefits to students of VLEs are discussed in Section 2.9.1, and benefits to staff in Section 2.9.2 (see also Section 6.9 for a fuller analysis). Section 2.9.3 considers organisational strategies for developing VLEs, and Section 2.9.4 examines whether VLEs have a good or bad effect on the development of information skills. One possible benefit of VLE use to students and staff is tailored access to learning resources at home, and over 50% of students interviewed have their own ISP connection (Section 2.9.5).

2.9.1 Student views on learning through VLEs

Students value the convenience of VLEs, particularly for access to tailored resources off campus, and the fact that the VLE provides a useful supplement to learning, but several students only viewed it as a back-up. Some realise more could be provided.

'A lot of my tutors put up announcements on there, things like...essay titles came out on Blackboard for a couple of my modules. The course documents are all there so if you miss a lecture all the lecture notes are up there.' [122104, from text units 192-196]

'It actually depends on whether I've been to the lecture or not, if I haven't been to the lectures then it's good backup, or good guidance but mainly, if you're in the lecture, then no.' [135102, text units 164-168]

'It's OK when you don't really understand the topic you're looking at them – it's just information but no real sort of help or guidance...but I think they are useful, I'd like to see more of that in college I must admit, having more things online, being able to access them from home as well would be nice.' [136111, from text units 101-109]

In previous Cycles interactive use of the VLE has been confined largely to the sciences, but in this Cycle there is some evidence that other disciplines are getting involved. In the sciences, multiple choice questions are used for formative and summative assessment. There is some, though limited mention of group working via an intranet or VLE.

'There's a move in the class to try and involve people more in that [creative writing page] to post their own work up on the Web site.' [106106, text units 196-198]

'Like MCQs. It's basically we go on there, have to fill them all out and they mark them electronically and give us the results back...we go on to the department home page...there was something to do with our biochemistry...it was sort of simulation...and there were a few jazzy things that ran across the screen. It was more a visual way of reinforcing all that had been said in lectures.' [107106, from text units 139-141, 174-180]

'I'm aware [discussion groups] exist on the college intranet but I'm unaware of whether anyone actually uses them or not.' [112110, text units 200-201]

2.9.2 Staff use of the Intranet and VLEs

One theme identified during Cycle Four, and explored in more detail in Section 6.9.3 is the 'problem plateau' in VLE development. Staff find it fairly easy to mount supplementary learning resources (e.g. lecture notes, powerpoint presentations, reading lists) on the VLE, as they would for a departmental Web page or institutional intranet. Getting beyond that stage, to use the VLE for individualisation of learning, or supporting peer-peer learning seems a major hurdle.

'At the university...we have a lot of learning resources on our Web pages. Um but there isn't really anything interactive. I mean we've experimented a bit with WebCT but we're not actually, I mean it's something I think we probably will make use of in future but not yet.' [107301, from text units, 160-164]

Further development for this academic required some reassurance that the technology would be stable.

'We have a phone directory, we have module lists, and modules per student...we've got photos on there as well which we use quite a lot especially first years where we haven't quite put faces to names yet...For putting information on, I don't use it at the moment...Our intranet's in a state of flux at present...I used to have all my stuff on Word, it went to Powerpoint and now they're talking about having put it back to Word to put it as html documents to put on the Intranet. You know, I'd have to translate everything again.' [136301, from text units 452-465]

2.9.3 Policies and approaches for VLE development

Development in universities may be patchy, with one department innovating rapidly and other departments slower to implement VLEs. This can confuse (and irritate) students if there is no critical mass and they are studying in more than department.

'For me I don't see the point of Blackboard because in my degree you've got to take module outside your department and I'm taking [name] Now there is some [name] information on Blackboard but so far I haven't found anything relevant or useful, there have been no messages for me from my tutors but I check anyway just in case.' [122105, from text units 69-74]

In research intensive universities postgraduates are usually assigned to teaching purposes and this may now also include development of learning materials for the VLE, for those who have good IT skills. .

'Well in terms of Internet resources I also used an internal Internet that we've got going on in one of the projects in the department. I word process and use Excel a lot ... Because I do dialect stuff I have to listen to quite a lot of recordings and things, so I use Creative wave studio mostly for that. Oh and also I do some work, I have been doing some work for the department putting people's course materials on Blackboard for them. I've done that in the past as well, set up the course.' [122103, from text units 101-111]

2.9.4 Information skills and VLEs

Although staff would like students to search effectively and not to waste time fruitlessly surfing the Internet, there is a danger that VLEs may produce students who depend too much on resources which have been vetted for them.

'Yeah, I use Internet search engines, but not really for university, because you can't really be sure what sort of things they're putting up...So I tend to stick to either Web sites that have been suggested to us or use the [name] on the Institute page.' [107114, text units 93-96]

Students may obtain guidance for seminar work from resources signposted on the Intranet. In contrast to the strategy explained above, the following student started with the Intranet listing but decided to do a Google search to extend the search.

'Well actually I think it was yesterday evening, it was that I couldn't find enough material or I thought the notes were unsatisfactory, so I just went on Google.com and typed in something that had to do with my notes. Computers and language or Turing machine I think it was. It took me just to some sites that hadn't been listed on the links from the Intranet notes. That's pretty much what I downloaded then so I could write out a discussion for the seminar that I have. That was the last thing I did in terms of university notes.' [122101, from text units 41-51]

VLEs should build on the type of skills encouraged through this type of reflective learning exercise.

'We also had to do a little assignment, a 500 word assignment on how you found your data, well how you found all your um, how you got your resources, where did you find them and did you use books, and if you did, how did you go about finding that book? If you did electronic journals, how did you go about, what did you type in to look up these journals? So every nursing student gets this when they come in.' [112106, text units 136-142]

2.9.5 Home access to the Internet

Over 50% of postgraduates and undergraduates have their own ISP connection (Table 2.20).

Type of Student	Number	%
PGs n=13	9	69%
UGs n=75	45	60%
FE n=151	97	64%

Table 2.20 Students with own ISP connections

Size of FE institution	Number in sample n = 16 (Selected n = 16, 0 unable to participate)	Number of interviewees for user behaviour survey
Large (> 18,000 Students)	3	26
Medium (> 6,000 < 18,000 students)	7	75
Small (< 6,000 students)	6 (includes two specialist colleges)	61

Table 3.1 Sample characteristics for FE colleges

Age range (where stated)	Number of student interviewees (Male, n = 64 Female, n =75) Sex not stated n=12	Number of student questionnaire respondents (Male n = 73 Female n = 124 Sex not stated n = 5)
Under 20	72	133
20-29	44	38
30-39	8	21
40-49	7	8
50-59	2	2
60+	0	0

Table 3.2 Age distribution of FE sample students

3.2.2 Survey methods

The methods comprised:

- Critical incident interview/questionnaire, with use of a critical success factors technique and vignette (to assess use of EIS, attitudes towards EIS, awareness of EIS and searching strategies among FE students). The survey instrument was modified in light of previous findings, the main changes being the modification of the spectrum of purposes, and inclusion of a vignette, to supplement the awareness checklist of EIS used in the pilot.
- Critical incident interview/questionnaire, with use of a critical success factors technique and vignette (for the interview), plus some additional questions, for academic staff.

Appendix 3.3 details the basic questionnaire, Appendix 3.4 the basic interview schedule, and Appendix 3.5 gives some examples of the vignettes used.

3.2.3 Response rate

Disciplinary cluster	Number of departments in sample n = 24	Number staff interviewed n = 11	Number of students interviewed n = 151	Number of questionnaire returns (staff and students) n = 215
Health Care and Social Sciences	6	3	45	86*
Humanities and Arts	6	1	41	15
Maths and Engineering	6	2	19	23
Applied Science and Technology	6	5	46	91

* Includes one student doing an FE-level course in a college of higher education, outside the FE sampling frame

Table 3.3 Distribution of FE sample among the disciplinary clusters

Site code	Student interviews	Questionnaires (academic staff)	Academic staff interviews	LIS purchasing (Strand C)	Questionnaires (students)*
109	5		0	0	11
110	10		1	0	24
111	12		0	0	19
114	10	2	2	0	21
115	5	1	0	0	5
117	10		0	1	
118	7		1	1	
119	6		1	0	16
121	9	3	1	1	23
124	10		1	0	
126	8	2	0	0	24
128	20		0	1	
129	7	3	2	1	22
130	10		0	0	
131	10	2	1	1	21
133	12		1	1	15
Total	151	13	11	7	201

* Excludes one student doing an FE-level course in a college of higher education, outside the FE sampling frame

Table 3.4 Site response rates for FE

3.2.4 Analysis methods

In Cycle Four the questionnaire data was entered into an SPSS database, as in Cycle Three.

Some of the quantitative data that could be derived from the interviews were pre-coded for easier extraction from the qualitative data analysis software, and subsequent comparison with the questionnaire data. For Cycle Four, the qualitative software package used, NUD*IST 6, was an upgraded version of the package used previously, (NUD*IST 4).

Coding and analysis followed similar routines to those developed for the HE analysis, and similarly comparisons are made where appropriate with the previous year, Cycle Three (column figures in *italics*).

3.2.5 Limitations

It proved difficult to recruit senior library managers for the purchasing interviews, but the response from the colleges for the monitoring framework was very encouraging.

There is considerable development in the sector being planned but, as the interviews with the senior managers confirmed, some of the outcomes are not yet clearly evident.

3.2.6 Implications for future monitoring

The next cycle should produce more evidence of the uptake and use of JISC initiatives, such as the National Learning Network materials.

The FE student questionnaire could be simplified further to make the responses more reliable. The question on EIS frequently used should be omitted as the responses are not reliable or valid as students frequently do not interpret the question as intended.

The questions on training and induction need to be reviewed to cover, for example, use of the RDN Virtual Training Suite materials. As already indicated for the HE sector, the question about induction is not perhaps a useful one to ask in the questionnaire.

3.3 Use of EIS by FE students

Results for the questionnaire survey and interviews are presented alongside, but have not always been integrated for several reasons, e.g.

- Coding categories used for the questionnaire and interviews differ slightly (the preset categories for the qualitative analysis have to be more general as they cover both the HE and FE sector)

The sub-sections in this Section cover:

- purposes of EIS use (Section 3.3.1)
- patterns among sources used (Section 3.3.2)
- patterns of Web site use (Section 3.3.3)

Later Sections cover:

- use of EIS by staff (Section 3.4)
- progression in information skills (Section 3.5)
- influences on student use of EIS (Section 3.6)
- information skills education and training (Section 3.7)
- e-learning and VLEs (Section 3.8).

Quotations from interview transcripts are included to illustrate the discussion. The format of the coding is as follows:

site code (two or three figures, followed by three figures to denote interviewee code number: 1** = student, 2** = library staff, 3** = academic staff, 4** = senior library staff.

3.3.1 Purposes of EIS use by FE students

As indicated (Table 3.5), FE students are using EIS frequently for coursework, which may be a project of some type.

'I was looking for information on Down Syndrome. Doing a project on that. And I went on to the Freeserve Search engine.' [110106, text units 12-13]

'I think I was looking for a Health and Safety project for college.' [114103, text units 13-14]

Purpose of search (interviews)	Frequency n = (students n = staff n = 151) %	Purpose of search (questionnaire survey)	Frequency n = 210 (students n = 197 staff n = 13) %
Assignment (students only)	72%	Coursework (students and staff)	90.4
Recreational	11%	Leisure/ shopping	11.9
Shopping	4%		
Travel	2%	Planning an event	5.7
Presentation	-		
Lecture notes	-	Final project	2.9
Teaching support (staff only)	not applicable	Work duties	5.2
House searching	2%	Research/ funding proposal	4.3
Job search or application	2%	Job search or application	4.8
Other		Other	4.3

Table 3.5 FE students' reasons for seeking information in the critical incident

3.3.2 Finding information: use of EIS by FE students

Students were asked which EIS they used frequently. Questionnaire responses for all other types of EIS apart from search engines have been excluded as it is clear from the responses that for the FE students answering the questionnaire, electronic information services mean the Internet (search engines) and only the Internet (Table 3.6).

The interview responses show little change from the previous year. There may be an increase in the frequency of CD-ROM and e-reference material use. Comparing this table to the corresponding table for the undergraduates (Table 2.5) indicates that the three top EIS are the same (search engines, personal e-mail and texting). Undergraduates make far more use of their OPACs (83% compared to 27%), while FE students make more use of CD-ROM materials. VLE use is greater among undergraduates (c. 50% compared to 10%), bibliographic databases are hardly used at all in FE (53% compared to 4%) and, similarly, e-journals are used more by undergraduates (56% compared to 10%). Comments from interviewees suggested that use of resources such as Infotrac required considerable promotional effort (Section 3.5.3). Interestingly, there is a large difference between academic and personal e-mail use in FE (50% difference) whereas the gap is much smaller in HE (8%).

EIS USE	FE: questionnaires n = 169 %	FE students n=151 % rounded up	FE students n=122 Interviews Cycle Three
Search Engines	94.7	132 (87%)	same rank (87%)
Texting		129 (85%)	not coded
Email Personal Use		126 (83%)	not coded
CD ROM		86 (57%)	same rank (42%)
E-reference		64 (42%)	same rank (22%)
Email Academic Use		45 (30%)	not coded
Own OPAC		41 (27%)	same rank (18%)
Statistics software		30 (20%)	not coded
Email Discussion Groups		27 (18%)	not coded
Gateways		23 (15%)	same rank (9%)
Intranet Local Information		23 (15%)	
Internet via Wap Phone		17 (11%)	
Ejournals		15 (10%)	
Intranet Courseware/VLE		18 (10%)	
Bibliographic databases		6 (4%)	
Subject tree/index		4 (3%)	
Intranet Student Records		4 (3%)	
Other OPAC		4 (3%)	
Ebooks		3 (2%)	
Intranet Lecture/course notes		3 (2%)	

Table 3.6 EIS used frequently by FE students

EIS used	FE students (interviews plus questionnaires) n=320 %	FE student interviews n = 151 %	FE questionnaire n = 169 %
Search engines	90.9	86.8	94.7
Organisational, known Web sites	7.2	13.7	3.0
E-mail, newsgroups, etc.	1.3	0.7	1.8
Local EIS (CD-ROMs, etc.)	1.0	1.3	0.6
Own college Web site		0.7	0.6
General e-journals		0.0	0.6
Web EIS (reference sources, timetables, dictionaries, and shopping etc.) and News resources		0.7	0.0
Other databases			0.6
Current awareness or SDI service			0.6
OPAC (own LIS)		0.0	0.0
Other EIS categories: Gateways, Databases (non-hosted) via the Web, JISC negotiated services, Named e-journal collection, Other (non-JISC) host-provided database, OPAC (other than own LIS), E-monograph or pdf file, Web text archive, Document supply service, Pre-print collection, Electronic collection management service, Own LIS subject tree, News		All zero	All zero

Table 3.7 EIS used by FE students in critical incident search

The pattern of EIS use in the critical incident search differs little from that found last year. Search engines are the favourite EIS, by far. Organisational and known Web sites are also used.

'Well the most recent was probably yesterday night and I was thinking I could either go for a normal, just swap them [brake discs] for...performance ones or go for a whole bigger set-up. And then I just had to weigh up the costs of each method and that involved doing research on Web sites that actually sell parts like that.... Yeah because I had them all in my favourites and then so I just click on to

them and they would take me to that specified one.' [128109, from text units 34-43]

FE students (see Section 6.6.1) are not using OPACs, presumably as they can find the books they require on the shelves without resorting to the OPAC, or else they have little need to use library books. As noted in the in the *Highlights* (Appendix 1.7) some staff are using the Internet instead of books. For some FE students, this lack of awareness of OPAC use may be a problem if they go on to higher education, to use larger libraries, and to courses which do rely on OPAC use.

'[Interviewer: If you wanted to pinpoint a particular book how would you look for it?]'...I'd just look that way...I'd just search for the subject section.' [124103, from text units 161-165]

3.3.3 Patterns of Web site use by FE students

FE students are using search engines and organisational Web sites, often known to them in their searching, for college and leisure purposes.

'I went on to Google, Yahoo and SearchE.co.uk, it's a new one it's just been made up, it's a really good one it gives you different ones...because one of our friends found it. I went on to health Web sites and bits and pieces because I know some of them, NHS and Health Square and Kids ones as well.' [111107, from text units 33-37]

'There's one called ABE books, they have kind of second hand stuff and very cheap stuff sometimes, and then Amazon...I just knew them really.' [126106, from text units 13-19]

'It was football results. I used Sky sports dot com.' [128120, text unit 28]

They are personalising their learning environment.

'I've stored a lot of related Web sites to what I need for college...so first of all I went to those favourites, there's a few medical ones and then there's some university ones that have got like database kind of Web pages.' [121102, from text units 16-20]

For current information such sites provide the information required. As noted for the undergraduates, the expectation is that such sites will be, effectively, a portal.

'Yesterday I just went to Channel 4's Web site, I wanted information on an event that's going on in the summer with Time Team...it was all hyperlinked anyway.' [111112, from text units 9-12]

Vocational courses require investigation of current affairs and what organisations do.

'Lloyds TSB.co.uk, the official site, because it [assignment] was all about their actual Web sites and what's on their Web sites, so you've got to really go on their Web sites to find out.' [115103, text units 16-19]

Technical advice and support is provided (and often only provided) on the Web rather than in printed documentation. Special interest materials may be available only on the Internet.

'So at first I got the serial number of the equipment I was using, browsed then on the Dell Web site for any drivers or documentation on this piece of hardware via the Web site. Found the documentation, downloaded it to a network drive, viewed the documentation with a PDF saying "can't read it" found out what I needed to do fix the problem did it and it worked and that was it.' [117109, text units 37-42]

'Typed in slavery music, cool and response...and it came up with a Web site. I think it was called Negro Spirituals...then I needed to search blues, so typed blues into Yahoo again. Came up with a site called Blue Highway and that gave

me information on the actual style itself...then I went on to country music and I went into the BBC Web site into the music section.' [124101, from text units 24-35]

3.4 Use of EIS by staff

3.4.1 Use of EIS for particular information purposes by staff

Staff could easily recall an instance when they had used EIS.

'I use the Internet an awful lot, usually every day for work for various things. So looking up things like nutrition for animals.' [118301, text units 10-11]

3.4.2 Finding information

Staff are also developing a personal electronic information environment – their favourite sites and search engines - for their work.

'I was looking for some things on the Internet regarding the Oxford and Cambridge boat race...I just logged on to the Web site which I knew.' [121301, from text units 9-12]

'I was looking for information on equalisation for a student...I just went on Sound on Sound which is a music publication magazine, on to their Web site and searched their archives.' [124301, from text units 13-16]

'Looked up recent figures on AIDS...on the WHO Web site.' [131301, text unit 9]

'It seems as if I get more the level for which I'm looking in Google, Yellow is it , Yellow Pages thing. I use that one but I usually start off with Google and then sort of perhaps AltaVista and sort of if I'm desperate I get on to Ask Jeeves. If I'm desperate.' [114301]

3.4.3 Use of EIS for communication

Staff are using e-mail for academic reasons, although there is little evidence that staff and students are using e-mail for communication.

'We're currently involved in a project. We're setting up a satellite project, foundation degree for classroom assistants. So I'm currently involved with part of the working group on that project.' [110301, text units 33- 35]

3.5 Progression in information skills

The preferences students have for particular EIS, including particular search engines are considered in Section 3.5.1. Normal information seeking routines for their studies include printed books as well as EIS (Section 3.5.2). Use of more specialised resources is examined in Section 3.5.3, and perceptions of satisfaction, dissatisfaction and confidence considered in Section 3.5.4. Disciplinary differences are covered in Section 3.5.5.

3.5.1 Rationale for selecting resources

Some students explained why they chose particular search engines.

'I have cut and paste some images and picture of various symbols to do with Islam...Images on Google and text on Yahoo.' [110109, from text units 26-33]

Finding specific information at the right level of detail can be a problem, but sifting on screen seems easier to some than sifting through books.

'I think it was "clusters" and then getting a whole load of information and then going through and basically picking out information that was relevant...because quite often you get something that's in far too much detail for what we need at our level...but obviously it's quicker than having various books in from of you.' [117103, from text units 37-42]

'You come up with a lot of university question papers that lecturers have set oor where you can to study enzymes, what university, or sometimes kind of manufacturer selling enzymes or whatever, and also I'm looking for a very specific level of understanding. I don't want too basic but I don't want to go into huge amounts of detail, so I'm actually looking for a bit more than...what she's already taught us, but it doesn't go so complicated that I keep having researching to understand what I'm finding.' [126103, from text units 38-48]

3.5.2 Information seeking routines

As a way of checking how electronic information resources fitted into their normal, routine seeking for information for their studies, students were asked how they would answer a problem in their subject area (the problems varied according to the subject and level of study). This is the last part of the interview and in some cases (15 students in total) it was not possible to complete this part of the research work.

Strategy	Trend	FE Student (Cycle Four) n=151	FE students (Cycle Three) n=122
Internet 1st	Up	63	39
Library & Books 1st	Slightly down	37	36
Internet Only	Down	17	31
Ask Someone	Same	13	9
Course Notes		8	not coded
Organisations	About same	9	4
Specialised EIS		0	0
Intranet		0	2

Table 3.8 Strategy used for the vignette problem

What is quite interesting about the vignette trends (Table 3.8) is that the apparent rapid rise in Internet use for routine coursework problems may be slowing. Although more FE students would turn to the Internet first, that would not, generally be their only source of information. Books (library books and their own course textbooks) are still are a major source of information for them (See also Section 4.3.4). FE students, at this stage, are more likely to turn to the Internet than HE students, but this may reflect a combination of factors – a preference for something exciting and new, lack of textbooks in their area and the diversity of provision in the FE sector. Some students may associate book learning with school failure. For these reasons the strategy of interest in future monitoring will the Intranet, but at present the usage is too low to show any meaningful trends.

3.5.3 Gaining familiarity with specialised services

Students were aware of Infotrac, but librarians acknowledge that it needs to promoted, consistently. Its coverage could be better, too.

'I used the Infotrac for a sociology assignment but I've not really used the Intranet, I tend to go on the Internet if I want to find anything.' [109101, text units 119-121]

'Databases operate in different and difficult ways...Some journals do not want to put their information on Infotrac. It's a big problem....Well we hardly ever see students having initiated their own use of something like Infotrac.' [117401, text units 53-58, 84-85]

3.5.4 Satisfaction and confidence in information seeking

3.5.4.1 Factors governing satisfaction and dissatisfaction

FE students tend to cite the fact that the Internet is more interesting and produces more up to date information for them (although books are also used, see 3.5.2)..

'The Internet I just find interesting really and the information is just there without you having to look all around.' [109105, text units 132-133]

'But on the Internet you can get up to date things...so I think when it comes to more recent research we tend to use the Internet but you know the basics I always use the books for.' [111104, from text units 52-55]

Filtering software causes a few problems for social work and health studies students,

'We were doing a lifespan development project about children and we needed pictures of children and I typed in pictures of children and it came up that it was filtered because for paedophilia and stuff like that, so that's a bit annoying.' [111108, text units 131-135]

3.5.4.2 Reflection on information seeking processes and confidence

Some FE colleges successfully provide a supportive culture for students, where students are encouraged to identify their own needs and act accordingly.

'Well, you've just got to ask mainly. Ask if you can go to the library for a while to check up some stuff and you just ask anything you need if you're not sure how to search something then the teachers, the lecturers will tell you. They're quite helpful.' [129105, text units 144-147]

'I've literally started this course not knowing anything about the Internet...when I first started I was very dubious...it's totally changed that I'm now quite pro-Internet.' [115101, from text units 28-36]

3.5.5 Disciplinary differences

As in the previous cycle, the disciplinary effect in searching style was evident. Health studies students were more likely to explain a systematic approach to searching and approached the evaluation of Web sites found.

'It has little captions and if I think it's related I read, if not I'll go through each one if there's not too many...I'll go through the first page and see if there's anything useful, if not, I'll just search again...and then I narrowed it down to nursing qualifications and it gave just a few results.' [109102, from text units 41-49]

There is no great difference among the five subject disciplines in respect of the reason for the critical incident search, and the pattern is very similar to that of last year in Cycle Three. The comparatively higher number of final projects undertaken in mathematics and engineering in Cycle Four this year might be attributed to the effect of one site, and the timing of the survey (Table 3.9).

Purpose of critical incident search of reporting FE students, questionnaires only	Subject Discipline (% reporting named purpose)					
	PAS n = 81 %	ME n = 21 %	PASS n = 81 %	HA n = 13 %	CM n = 1 %	All reporting FE students n = 197 %
Coursework	86.4	95.2	93.8	92.3	100	90.8
Leisure/shopping	12.3	19.0	11.1	15.4	0	12.7
Work duties	4.9	4.8	4.9	7.7	0	5.1
Job search or application	3.7	4.8	7.4	0	0	5.1
Planning an event	4.9	4.8	7.4	2.7	0	6.1
Final project	1.2	14.3	2.5	0	0	3.0
Research/funding proposal	1.2	9.5	7.4	0	0	4.6
Other	4.9	0	3.7	0	0	3.6

Table 3.9 Purposes of EIS (critical incident search) among different disciplines

3.6 Influences on student use of EIS

3.6.1 Influences on FE student use of EIS

The students' own experience remains the prime factor – an experience drawn from work, previous school experience and home, as well as training and support provided by the FE institution. There is no marked change between the pattern for this year and that of last year in Cycle Three (Table 3.10).

Factors leading to EIS use in critical incident	FE student questionnaires n = 196 %	FE student questionnaires n = 132 Cycle Three %
Own previous experience and results	59.2	50.0
Lecturer or tutor recommendation	32.7	34.8
Friend or colleague recommendation	20.9	18.9
Read about it	6.6	4.5
Course or session organized by LIS or IT services	2.0	8.3
LIS or IT services staff advice	7.7	7.6
Course Website	3.1	4.5
Other	1.5	1.5
Reading list	3.6	0.8
No response/data	3.1	0.8

Table 3.10 Factors leading to FE students' use of EIS in critical incident search

Advice from tutors is usually informal.

'It was given by the course tutor...And then when I'd been on it, I saved it in favourites, yes.' [114106, from text units 16-18]

There is more discussion of the influences on FE students in Section 6.6.

3.7 Information skills education and training

FE students received information skills support and training in a variety of ways (Section 3.7.1). Their views on such training (Section 3.7.2), including Key Skills (IT) (Section 3.7.3) show that they are aware of IT/information skills, although views are (unsurprisingly) mixed on the value of Key Skills. Staff are aware of some of the drawbacks (Section 3.7.4). There may be some parallels between PBL in higher education and resource-based learning in FE (Section 3.7.5). Staff are taking up opportunities for IT/information skills training (Section 3.7.6).

3.7.1 Sources of information skills training

Type of training	Students receiving training: Questionnaires n = 192 %	Students receiving training: Cycle Three Questionnaires n = 127 %
Course tutor	18.2	27.6
Keyskills session	46.4	not asked
LIS/IT induction session	41.7	26.0
Ad hoc help from LIS staff	21.9	not asked
LIS/IT specialist session	0.5	7.1
Other training	2.1	1.6
No training	25.5	41.7

Table 3.11 Type of information skills support for FE students

As with the data for HE, two new forms of training were included in the instruments, Key Skills session and ad hoc help from LIS staff, to define more clearly approaches to training. The fact that 46.4% of respondents indicated that they had participated in a Key Skills session probably accounts for the decrease in the frequency of course tutor instruction (down 10%) and specialist sessions (down 6.5%) from last year. What is noticeable, however, is the significant decrease in the incidence of *no* training perceived – a reduction of 16%, again probably partly due to salience of Key Skills sessions among students. The inclusion of an additional mode of training, ad hoc help from LIS staff, does in fact offer greater insights since almost a quarter of the students surveyed have received guidance in this way. There is more discussion of Key Skills in Section 6.7.2.

Teaching staff provide advice informally.

'No I put it [UK] right at the start because I made the mistake at the beginning of year, we had to do something on handwashing and I went on Google and just put handwashing and the first thing I found I printed off and highlighted it and I got it back and the teacher said that is was American so now I always put UK.'
[109105, text units 60-64]

Experience and practice help, obviously.

'I look at the little captions. You know sometimes you get little captions underneath I think. I used to go through every site but with experience, you sort of, you know by the caption with your own experience whether it'll be any good, I don't know but I just know.' [110101, text units 72-76]

In comparison to other types of institution in higher education the influence of the Key Skills framework is obvious (as expected). Further education is fast catching up with the higher education sector in other training provision. The one puzzling statistic is the perception among students that course tutors do not provide information skills training, but presumably students have ticked the Key Skills category alone for that type of training support.

Type of training	Type of institution				All students n = 344 %
	CFE n = 194 %	ORU n = 40 %	ONRU n = 10 %	NU/CHE n = 100 %	
Any form of training	72.7	95.0	80.0	79.0	77.3
Key Skills training	45.9	0	0	1.0	26.2
LIS/IT induction session	41.2	80.0	70.0	67.0	54.1
Informal help from LIS staff	22.2	37.5	40.0	23.0	22.1
Training from course tutor	18.0	57.5	40.0	30.0	26.7
LIS/IT specialist session	1.5	40.0	40.0	15.0	11.0
Specialist external consultant	0	0	0	1.0	0.3
Other training	2.1	0	10.0	3.0	2.3
No training	25.8	5.0	20.0	21.0	21.8

Table 3.12 Comparison of FE and HE information skills training

3.7.2 Student perspective on information skills training and support

Induction (see Section 6.8) for FE students should orient them to the library services and should convey the impression that help will be provided when required. This student described an orientation activity which may not be appreciated by all students but this one liked it.

'We were taken round on our induction day and we done like a little game thing we had to go and find different areas of the books and we had to go find the Internet computers and bits and pieces and so we had an induction to the library and then they sat us down and told us where everything was and if we needed any help they'd be there to help us so that was all right.' [111107, text units 124-129]

Another viewed the induction as 'this is where the library is' and the 'how to use' aspects came with Key Skills.

'Only they said, gave us a tour round what we had to do with taking books and using computers but they didn't give us a run down on how to use them. Because we were doing Key Skills, so.' [121105, text units 100-102]

With greater class contact time than most HE students, FE students may have greater opportunities for informal support. In the following extract, a student explains how Resource Based Learning sessions provide informal support.

'We have an hour RBL session once a week, we each have our kind of teacher, she'll tell us how to search for things in the books or on the computer, how to write bibliographies. If we need any help with our coursework she's there...which is good.' [109102, text units 111-114]

Mature students are likely to be appreciative of structured support.

'We're very lucky because the CLAIT is part of the nursery nursing course which – without that I would have been absolutely useless.' [110110, text units 64-66]

'Well, I thin I need a lot of help and you know reassurance but I'm, the college is really good at providing support...you know they've provided me with a laptop because my spelling's poor.' [129102, from text units 195-198]

3.7.3 Key Skills (IT) and information skills

Most staff consulted consider that the Key Skills framework has improved FE students' skills, and this was the consensus view at the dissemination workshop in June 2003. There is one possible problem as far as information skills are concerned in that Key Skills at level 2 may not place enough emphasis on the skills of using the Internet effectively and appraising information (See also Section 6.7.2.1).

Some students do receive support in making searches more focused, but perhaps the appraisal and evaluation need more emphasis.

'Yes, we did Key Skills last year, IT Key Skills, we did a few hours worth of just different searches and how to narrow it down just to get the good results rather than all the rubbish.' [109102, text units 102-104]

'Yes in Key Skills they teach you how to make a good search.' [111110, text unit 86]

'Although we worked on the Internet it was never really specified to proper searches, it was more putting together letters and CVs, projects and stuff, useful stuff.' [111111, text units 64-67]

The experience of Key Skills can seem less coherent to students who have dipped in and out of courses, and for those over a certain age (19), there may be no compulsion to comply.

'I did IT as a GCSE when I left school at 16. Since then I've been to college before this course and I've had to do IT Key Skills sort of bits and bobs...I've just sort of picked it up as I've gone along really...because I'm 21 I don't actually need to do it now luckily.' [109103, from text units 62-69]

Other students noted that IT Key Skills did not teach them much in the way of Internet searching that they had not learnt at school.

'I suppose it's more word processing but they are there to help. Throughout school it was more, they taught you how to use the Internet, I remember them teaching us how to do that.' [109104, text units 92-94]

Others had picked up any skills they had by trial and error, as the following student explained on being asked how they knew what they were doing in searching.

'I've done it, I've just learnt, I don't know.' [121109, text unit 110]

Another student learnt Internet skills from other students, and the Key Skills were viewed as something to be done, but largely consolidating skills acquired previously.

'I wouldn't say we've actually been taught as such but I've picked up quite a lot of it through the other students in my class, they've got a lot more experience on the Internet...We do a Key Skills course...but I covered all of that in the basics that I did before I came to the college.' [11501, from text units 119-125]

Other students think that Internet searching is pretty easy and few skills are required.

'We sort of get in and like the teachers hope that we know and most of us do really, we all find it quite simple, it's you know go on to a search engine, type in what you want, that's why people use it because it's that simple, you don't really have to know that much. Although you do get a lot of rubbish listed.' [124104, text units 134-138]

One way of encouraging the 'know-all' students to share their knowledge (and possibly realise that they do not know as much as they think) is direct encouragement of learning among students (peer-peer support).

'There is nothing that I didn't know already, but...that was part of our Key Skills module to do a simple search and an advanced search and then make a database of our results and talk to other people about the results they had and evaluate them. We had to say which was the best CD.' [130104, from text units 156-160]

In another example, the LRC hosted a group work project which made the Key Skills seem relevant.

'We decided to do sexual health and we done loads of posters with questionnaires and a presentation and the library resource centre let us have quite a big area actually to put it all up and we had like a Powerpoint presentation going continuously and questionnaires to stop people on the way in and I think it was our tutor that arranged for it to be advertised on the intranet for us.' [111103, from text units 158-164]

3.7.4 Staff views on students' information skills support

HE staff reflected on the need to promote an appropriate learning culture within their departments (Section 2.8.4) and 'information skills' were viewed as an integral part of the learning culture. FE staff similarly see the benefits of Key Skills for coursework.

'They have Key Skills...and we place close emphasis on them attending that because they find that if they attend Key Skills and they can develop their communication and their IT skills particularly that it does support them with their coursework.' [110301, from text units 151-155]

Different levels of Key Skills can cause problems if the assignments are not relevant. While Key Skills level 3 is appropriate for students entering university, the assignments may not be relevant to students.

'We were thinking of level 3 but level 3 involves too much work on databases and it's contrived and they've got enough work to do without contriving assignments. Whereas at level 2 they can bash stuff out that's there, it generates from their vocational work.' [119301, from text units 43-47]

For students going on to higher education, there may be a need to emphasise other information skills. Superficially, students may appear to have understood something in a written presentation, but encouraging them to get to grips with an article or material they obtain off a Web site requires time and some persistence on the part of the teacher.

'In the course there's a thing called CRS which they moan about bitterly...core related skills, so for example at this level they have to do proper Harvard referencing, and on the Key Skills they even have to fully reference any pictures they got off the Internet, which they hadn't used to have to do. So that's fairly robust...something else they do on CRS, they'll analyse a paper...so you give them the paper, divide it into chunks, get four people to do one bit and say write down the words you don't understand, because a lot of the concepts the vocabulary is horrific...but it's very time consuming, that's the only problem.' [119301, text units 50-55]

Even so, some FE staff acknowledged that Key Skills are a hard sell to students in their institution.

'They just hate it. I mean however positively...we can be about it, telling them it's giving them skills for life, skills that are vital for them to get a job or get to university, they just don't believe us.' [121301, from text units 114-117]

3.7.5 Different organisational models

The Key Skills framework dominates the organisational models of information skills support in FE, of course. There are parallels between approaches in HE and FE. While in HE PBL (Problem Based Learning) has been adopted by the clinical sciences, in FE RBL (Resource Based Learning) is used in some colleges.

'And we have scheduled periods each week into our timetables where we actually have to go down to the library and do sort of study in the library for an hour to an hour and a half. There's a tutor that does that with us and she will actually help us with anything you need...to actually find the information that we need either on a computer or actually in the library...everyone has to attend, yes, you get

registered at the beginning of the lesson and you have to sign out at the end, so they make sure you are there.' [109103, from text units 87-105]

'And whenever you're stuck you can just pop, even if it's not your lesson, if you go and find them they'll always help you.' [109015, text units 119-121]

3.7.6 Training received by staff

Most staff perceive that some training, probably more than in the past, is on offer, but there seems to be some (considerable) variation in provision, and attitudes towards training.

Some FE College staff have to catch up with their students' level of computer literacy, but training is certainly helping, as this student observed.

'We are usually [left to search on own] because some of the teachers are not that much computer literate...so we are so computer literate they say it's easier to let us get on with what we're doing than them interfering really...one of our teachers...he says, right today I'm going on a computer course, next week I'm going to tell you what I've learnt. But it is good though that they send teachers on to computer courses as well.' [111107, from text units 103-113]

The type of training reflects the emphasis, at present, in many FE colleges on student administrative details on the college intranet – though there may be delay between training and evidence of actual implementation.

'Yes, there was a day's training that we did. You know I can't remember the name of it, I've never used it...it was for student...[name] for actually keeping track of student information.' [114302, from text units 47-57]

One FE lecturer mentioned that doing a PGCE had helped 'key skills' in IT.

'That's another thing I've found quite daunting being sat with a group with you know people clicking away at the keyboard and me thinking oh dear...But...I went on to do my PGCE and with that, key skills if you like, were embraced within that, ...so that certainly enabled me to hone my IT skills.' [110301, from text units 135-140]

Another, at a small specialist college, noted that their own learning sufficed.

'I mean they do the driver's licence [ECDL] there's nothing else I'm aware of. I'm quite happy with what I've got anyway because I've taught myself.' [118301, text units 66-67]

This attitude contrasts with a lecturer at another small FE college who seemed well supported.

'Yeah, we've got plenty of training. We've got regular staff development days where there's always some form of IT training going on.' [121301, text units 202-203]

In others the outcome of structured provision, negotiated with the library and IT staff to suit needs and delivered on inset days at the end of term, depended partly on the way the group was organised. Given the range of skills individualised training may be necessary.

'Each faculty had a chance to choose what inset they wanted...We were block booked in...The Internet one I didn't have a very fruitful afternoon. I worked with somebody, two to a computer on that occasion...It was somebody who was very experienced in it and whizzed through it...Emailing course, part of it was better, we all had a chance to, we sent emails to each other in the room.' [129301, from text units 134-150]

3.8 E-learning and VLEs

Benefits of VLEs and Intranets to students (Section 3.8.1) and staff (Section 3.8.2) include opportunities for consolidation of learning, and easier student administration. Most sites were just starting to develop their VLEs (Section 3.8.3). Effects on information skills (Section 3.8.4) are impossible to assess properly yet, though it is interesting to note that the majority of FE students interviewed had their own ISP connection (Section 3.8.5).

3.8.1 Student views on learning through VLEs

Interviews with FE students revealed that most enjoyed and valued interactive learning, in the form of CAL (computer aided learning) packages as well as interactive work on VLEs. Industry based training packages already boast Web-based training materials.

'We do get tutors but the actual Cisco module is web-based, so that's quite a lot of usage there.' [117101, text units 57-58]

'There's music theory on the computers which you're allowed to use...practice really.' [124103, from text units 181-185]

'Equals...it's got like all the practice assignments on, that's a very good Web site. Because that's taking you through everything that we're doing at the moment but it's actually giving you the questions as well. And all you've got to do it add to them, so you're like getting your general knowledge together a bit more.' [128114, text units 199-204]

Peer-peer support proved useful on a teacher training run in distance learning mode.

'It was a pilot scheme [teacher training], we only went in about five or six mornings, and the rest of it was on Blackboard. But it was very well set up, assignments were on there, we could communicate with other students which was again something which I think could be really developed. It was great. If you had a bad time teaching you could vent your feelings and someone else would be able to come back to you and say "well, I've had the same thing". And I can see it working in other courses.' [117103, from text units 238-245]

Some of the classroom discussion in face-to-face teaching in FE can be translated to the VLE environment successfully.

'We did have one assessment for one subject, there was an internet debate where we had to post our, it was an internet discussion thing where we had to post an argument on the internet every week or whatever, so that was quite interesting.' [126106, text units 126-130]

3.8.2 Staff use of the Intranet and VLEs

Some sharing of expertise for assignment production was mentioned by one tutor. Such sharing of knowledge may help to ensure that Key Skills are a comparable standard.

'If you write an assignment for Key Skills, Key Skills personnel have got a Web site, you can put your assignment on there and you can download somebody else's assignment to see whether that would be useful.' [129301, text units 167-170]

Staff appreciate access to the College intranet for administrative purposes.

'That is very useful because...you can always pull a document [policy and quality] off the college intranet...and I do quite a lot of cross college work and sort of meetings, minutes of meetings are posted on that as well.' [114301, from text units 96-101]

'For admin...I can download student databases, I can download candidate lists and things like that.' [119301, text units 216-217]

3.8.3 Policies and approaches for VLE development

Of the sites visited this year, those which had started on VLE development were starting initially via the intranet route, with the emphasis first on getting administrative details mounted. The approach is therefore more of the MLE first, incorporating the VLE. In other colleges the College Web site is simply a promotional tool.

'We've got the MLE and the VLE within there that they're piloting this year...and intranet section where notes and schemes of work, lessons plans, assignment briefs will be on there...we've got a system on the intranet where all the student records are there.' [124301, from text units 112-126]

'Not really, it's not very good, it's just the college what courses you can do it's not really any good for your assignments or anything.' [115105, text units 117-118]

Development of materials is time consuming and initiatives such as the National Learning Network should help FE staff. Only one FE lecturer mentioned the NLN, and only then to comment that there were no materials in the relevant subject area at the moment. Many of the teaching staff commented that there were plans for VLE development. The first stage tended to focus on student administrative purposes.

'We tend to put on schemes of work, a rough year guide as to when assignments are being given out. We don't tend to put specific lecture notes, though we have thought about that as a section.' [121301, text units 244-246]

Some FE lecturers had received training, although it may take around a year for the results to be seen.

'We had, one morning I think it was, on setting up learning online...in-house training from the IT department. It's actually setting up intranet sources for students to access....We'll put a course one on, we've actually put the course handbook on there. We were taught how to put, you know, like little quizzes on and things like that. I also went to the Learning Networks training one-day course...that was last September I think.' [110301, from text units 65-76]

For FE colleges, VLEs could be used in directed study time.

'They actually have special directed study where they have their timetabled access to a computer so they can be set work, to access those activities.' [110301, text units 85-86]

3.8.4 Information skills and VLEs

At the sites visited this Cycle there was insufficient evidence to judge how VLEs were affecting information skills. Key Skills (IT) places some emphasis on different types of information (text, numbers, image) and it is probably important to remember that many FE students need to be using and appraising different formats of information.

'If I had the pictures, they don't give you as much writing about things, things like that, it's still good but not as good as it could be...I didn't really need the writing but it's just easier to have because it can help you sort of understand what you are seeing.' [111101, from text units 66-73]

3.8.5 Home access to the Internet

Over 50% of the FE students interviewed had their own ISP connection.

Type of Student	Number	%
PGs n=13	9	69%
UGs n=75	45	60%
FE n=151	97	64%

Table 3.13 Students with own ISP connection

4 Purchasing EIS in HE and FE

4 The EIS Purchasing Interviews

4.1 Aims and objectives

Work in Cycle Four again included a round of purchasing intention interviews. The aim and objective of these interviews was to gather information from Senior LIS (Library and Information Services) Managers on EIS (Electronic Information Services) purchasing intentions and any problems they may face with purchasing plans. Originally, these interviews were designed as a back-up for the Strand C Web Survey, but now also provide back-up to the Strand A conclusions.

4.2 Methodology

The methodology for Cycle Four was the same as previous cycles. The data collection instrument can be seen in Appendix 4.1. Two extra questions were added for Cycle Four covering decisions on resource linking within VLEs (Virtual Learning Environments) and involvement with JISC RSCs (Regional Support Centres). The other questions remained the same looking at general perceptions of benefits to users of EIS; current concerns affecting ability to plan for EIS; special arrangements for remote users; management and staffing issues; web site development and maintenance; licensing and collaboration issues; budgeting and collection development; service evaluation and possible patterns emerging.

The concentration in this cycle was predominantly on FE colleges. Twenty three sites in total from FE and HEIs were randomly selected and initial contact made by email inviting senior library/information services staff to take part. From those twenty three sites, ten agreed to be included in this cycle of interviews. Table 4.1 shows the distribution of sites approached for interviews.

Site Code	Selection
106	Approached
107	Approached
108	Approached
110	Approached
111	Approached
112	1
113	Approached
114	Approached
116	Approached
117	1
118	1
121	1
123	Approached
124	Approached
128	1
129	1
130	Approached
131	1
132	Approached
133	1
134	Approached
135	1
136	1
Total	10

Table 4.1: Distribution of purchasing interviews amongst sites

Tables 4.2 and 4.3 show the distribution of interviews between different types of institution in both FE and HE sectors.

	Old University Russell Group	Old University Non-Russell	New University	College of Higher Education
Large (>18,000 students)				
Medium (>6,000 <18,000 students)			1	1
Small (<6,000 students)				1

Table 4.2: Types of HEI sites used for interviews of purchasing intentions

	General FE & Tertiary	Specialist FE
Large (>18,000 students)	1	
Medium (>6,000 <18,000 students)	2	
Small (<6,000 students)	3	1

Table 4.3: Types of FE sites used for interviews of purchasing intentions

All the interviews were transcribed and loaded into NUD*IST with the Strand A User Behaviour interviews.

4.3 Purchasing interviews: results

4.3.1 Perceived benefits and drawbacks of EIS, and current concerns

Perceived benefits of EIS remain the same as previous cycles; accessibility and convenience are the main benefits. Comments on user search skills and information literacy are becoming more frequent, whereby the benefits are offset against the drawback of lack of searching skills when using EIS and student expectations of what EIS can provide being too high.

'I think, really the resources, the number of ejournals and databases they can search especially full text resources. They can search incredibly quickly. Yeah, so ease of searching, ease of use. Providing they've got some kind of information literacy, you know skill. Yes, so really it's opened up a whole, I mean it's made research quicker and opened up a whole load of resources that they may otherwise have ignored for, due to not being bothered really.' [112401, text units 4-10]

'...It's useful that we've been asked a lot more questions than we were ten years ago. So there is, the curriculum is broadening so there is a need to provide a wider range of information. The wider range of course is on offer now as well and we go from basic skills up to graduate level. So really it's very difficult for us to

provide all the information that's needed in paper format. And there's also the same old thing that comes up all the time is one group of students has to investigate one thing altogether so we can't have sufficient numbers of books either. I think there's also student expectation. They think they should be using computers nowadays to get everything they want from them. We've put it all around the building so we're networked completely so that has taken some of the pressure off the floor we think because we were overwhelmed with students before coming up wanting to sit down and study. Now they can get information outside.' [117401, text units 4-17]

'.. I think from the students' perspectives and particularly for us at the moment, because we're only open late three nights a week now and we don't have weekend access – it's out of hours access – that's one of the biggest benefits of EIS. And, access beyond the Learning Centre into classrooms now – the college has gone from a Learning Centre based approach to a teaching which means you've got combined IT teaching going on so the access to the ejournals and the databases outside of the Learning Centre enables tutors to become more involved as well, although that entails some TRAINING!' [128401, text units 2-43]

'.. I think the main benefit is access in terms of students being able to access far more than they ever could before. And they can also get access from any sort of any place any time anywhere notion. We're certainly finding that students are accessing our resources all times of day and night which obviously they can't do with sort of opening hours. Making stuff available electronically has certainly improved access. It's also made a lot more material available to students so we're able now to provide far more in terms of resources than we ever could purely sort of through a print based mechanism. I think in terms of staff, staff benefit, they just want everything to their desktop so we don't see so much of them which is either a good thing or a bad thing depending on the member of staff but they certainly perceive benefits in terms of being able to manage their work load that they can get access to an awful lot of information just from their desktop. [135401, text units 5-18]

'.. Um, well really I mean all databases and all journals, all online resources have got some idiosyncrasies whether they can find the resources they want, I mean there's not much point resources being out there if they can't use them effectively. So it does command, using them effectively does demand a certain level of searching savvy I suppose. I'm not sure, I'm sure people are using them at a basic level but I'm not sure they're perhaps getting the best out of them if they are. And I think, you know, we certainly have here perhaps false expectation created by some, you know the idea is that everything is going to be there and online and available to read there and then and I think people don't understand sometimes that, so there's a disappointment sometimes with not being able to reach stuff there and then. And I also have written that perhaps there is a lack of, with online resources, there could be lack of clarity between what we've bought, what the library's bought, so what's kind of 'good' academically and what is out on the web. So they just see it all kind of, it's all online.' [112401, text units 23-39]

Technical and lack of communication issues are the main drawbacks noted for this cycle. Authentication problems are still cropping up, as well as lack of search skills and the reliance on teaching staff to promote EIS use amongst their students.

'.. A huge one. It's dependent on promotion. Teaching staff have got to be aware of it and welcome it and embed it in their curriculum. And if they don't do that then we can't really get students to use them.' [117401, text units 47-51]

'.. Students have very poor search skills. Databases operate in different and difficult ways. They are too complicated. What they include on these things like Infotrac affects what the student can search so we're running into problems with

copyright. Some journals do not want to put their information on Infotrac and they make them available somewhere else. It's a big problem. Training of library staff because we're not providing a united front. I think that's the main way that we can promote it here is by really ensuring that, well Infotrac in particular is ensuring that our sort of front line staff, well all staff actually, are able to promote it to students so when we're asked a general enquiry our staff can then answer an enquiry via something like Infotrac. I don't think there's enough of that going on necessarily. It's a big issue. We think the material included is often too high a level for vocational students because vocational information doesn't get into print in the same way. And we think students have unrealistic expectations of what a database can offer. They don't see that it's actually available on paper but it's been put on to a machine. [117401, text units 53-70]

'... Is when it's slow on the web. When it doesn't work and they get disenchanted with it. That is the drawback. But most of the time it's working quite well. We have had quite a lot of problems with (name) university with access to... with making ATHENS work.' [118401, text units 277-280]

'Drawbacks are that I think sometimes students can be overwhelmed now by the sheer variety of information sources available to them and they're all good, but they'll settle down into their normal pattern of taking a book off the shelf or just surfing the Net, if you don't keep reminding them that these other information sources are there, and also the fact that they need much better research skills and evaluation skills. It's had real implications for User Education.' [121401, text units 49-57]

'Here one of the major drawbacks has been not having a robust link with the network staff in that every time they change the IPs they forget to tell us, therefore nothing works! We've got a new MIS Manager and she is looking at that relationship and having a person who is sort of responsible to us in terms of passage of information and previously it used to be directly through the Network Manager – and get him on a bad day, then you've had it!' [128401, text units 78-86]

'The only drawback I could think of is the fact that passwords and usernames, the more of these we have, even with Athens authentication, not everything is available through Athens so it means having ... some of the resources access through Athens with one lot of usernames and passwords and some access using other usernames and passwords, and that can be a bit of a problem for some of our student users. But they're the only ones I can think of.' [131401, text units 12-21]

'I think in terms of the skills they now need to access a lot of the electronic material, this is a teaching led institution and we're very keen on widening access and we're pulling in students who traditionally might not have gone into education and they don't all have the skills to use these. There's quite a lot of work to be done to making sure it's level and fair for everybody, so if they all do have the skills. One of the drawbacks is you raise expectations. You suddenly provide bibliographic tools or abstracting tools to all this types of information, they then want the full text and it's often, you can't necessarily provide that straight away for subscription or cost reasons. So that at the same time is raising expectations, sometimes frustrations will then come into play because they can't access all the information they want straight away.' [135401, text units 21-33]

Current concerns again feature the worries of increased costs of EIS. A couple of institutions sampled are facing amalgamation with other institutions and one is awaiting a decision on whether or not they will apply for university status. These highlight the problem of possible increased student numbers affecting the institution banding payments for licensing agreements. Comments on lack of staff use of EIS are also noted.

'Absolutely, that's probably been the main one with the assimilation of (name of institution) we, for me, I mean it's not affected our JISC standing yet but for me there's a concern that it's going to affect in terms of increased student numbers, increased costs for databases, or become a medium rather than a small institution. Though changes, you know, are we going to become a university, are we having more students for the same money. I mean there's all these kind of concerns and I say especially here at the moment because yeah, because of all the change we are going through. It's not been a stable year really.' [112401, text units 43-51]

'.. The thing that we've talked about is ridiculous licensing arrangements. Five user licenses. So you try and promote it to a group of 14 and it's just impossible. And that's how we started off with Infotrac. (Unclear) took it on board so now that we can offer it to everybody that's made a difference. Also everything is becoming too dependent on computers and we can't just provide enough computers in the college. We think that the Learning Resource staff, the library staff are the greatest users of any of these databases and that is where our skills are developing and how we are actually providing a better service as a result of that so we don't want it all to go away. I think it's got to keep moving forward but it's how you look at it, perception. Some students will take it on board, the vast majority won't. The use that we can see, well we hardly ever see students having initiated their own use of something like Infotrac.' [11740, text units 72-85]

'We have some concerns on a number of fronts there because we've made quite a few changes to the LRC over the last year where we've swapped round and changed the balance of silent individual study and quiet group work to try and get away from this place being used as an informal common room, because I have lost staff in the past because of that - because we do supervise large numbers of students, far larger than any classroom teacher would be expected to supervise, so it's been a lot better this year. But, of course, with the extension, that's going to increase the numbers again so we are keeping an eye on what sort of impact there's going to be and if there's a way of supervising more students, because we certainly don't want this to compromise what we've already achieved.' [121401, text units 66-79]

'...we're having problems. We've got Infotrac and we're supposed to have home access to it but we've been having technical problems with that. Two of our online databases are accessible off site, or should be accessible off site, but only one of them is. We're still having problems with Infotrac for some reason but I think it's the Athens authentication but the network manager is still working on that at the moment, which is a shame.' [121401, text units 136-143]

'One of the concerns is the reluctance of teaching staff to use these resources. There are a couple of staff who are really proactive in using things and I think the way things are going within the college with the push towards virtual learning environments, I think there will be a certain element who will be forced into it. Some of the vocational staff have been surprisingly reticent - whether that's because their own skills are lacking - I think there's some work to be done there. Training time is an issue for us because we're a relatively small team...' [128401, text units 88-99]

'... On the concerns, cost is one of our main concerns. We spend an awful lot of money on our electronic resources and we're not sure if we're getting value for money. I think there's a question later on about evaluation. One of the main concerns is the cost and this issue about are we actually, are all students able to use the facilities we provide, do they all have the skills, and is it a level playing field because you might have some students who have very good at accessing resources and others who aren't and have we got a safety net or do we provide

the necessary instructions and user education so that all students have the ability to deal with it.' [135401, text units 37-46]

4.3.2 Management and budgeting issues of EIS

Widening participation within institutions is mentioned when concerned with management and budgeting issues. However, the question of any formal collection development is usually answered in the negative, apart from particular cultural necessities.

'... We're also very conscious of widening participation so we make a big effort to widen the range of material that we include because we think students don't have access to books at home.' [117401, text units 381-383]

'... Yeah. Oh yes, yes, we can buy a lot of easy readers, lower level teenage books, problem books, exploring, growing up, those types of books, which we've never had before. We feel there's a need for those at the moment, about bullying and street wise, all sorts of things.' [117401, text units 386-389]

'..Some schools do come in. It's very difficult in (name). It's not (unclear) like other areas. We're working on developing a resource for black culture. That's one thing that we feel is more in the area generally and so we are making conscious efforts to buy a better selection of material and that are student based.' [117401, text units 394-398]

There is virtually no evidence of formal collection policies. This factor has not changed over the past 4 cycles. As ever, purchasers are dealing reactively and are, in the main, looking for the cheapest option covering the widest area.

' No. I did ask. As I say it wasn't, not something I'm aware of but I think that we are investigating, formulating one. We've had a bit of a random collection policy I think up until now, things have had to give so we're thinking of writing some rules down but no nothing as yet.' [112401, text units 240-244]

' We support all new courses as they come on board, that's the main policy and then we try and replace existing materials.' [117401, text units 267-271]

' We haven't got a formal collection development strategy. It's down to myself and my staff and chatting to the curriculum personnel really. It's very difficult to choose because we get bombarded with all sorts...' [121401, text units 234 - 237]

' There's not a formal collection development strategy, no. And that is a gap. We have looked at one in the past and looked at collections development versus collection management. But it didn't get very far. So at the moment there is no formal strategy, it's done very much by the campus librarian in discussion with the Head of School and the academics.' [135401, text units 218-223]

4.3.2.1 Managing organisational changes in structure and staffing

In the smaller libraries within the FE sector it is more usual for the library Head to be responsible for e-resource management and purchasing. Several FE institutions report new library buildings being built and changes in time-tabling for the students affecting the concentration of numbers using the services at any given time. When asked about their involvement with their RSCs the replies differed greatly from having very close involvement and advice to having no involvement at all and complete lack of awareness of RSCs.

' We increased the individual silent study and decreased the group work, with consultations with senior management. They changed the common room so it now incorporates some seating for people who like to study in a noisy

environment. It's worked very well. Also, they've made quite drastic timetable changes since last year so the students are now more tightly timetabled. They may only come in 4 days or 4 and a half, but while they're in they're pretty tightly timetabled...they've less time to wander around in free periods. I was quite sceptical before this academic year that it would have any impact, but I hold my hand up, it's had a real impact.' [121401, text units 81-92]

'I think because we're multi campus we've got a very sort of devolved structure. We have very little which is done centrally. We have a central processing unit which looks after acquisitions, inter library loans and cataloguing material. Apart from that nearly everything else is devolved to the individual campuses. One of the things we're finding with electronic information services, we could probably do with a little bit of central coordination over things such as licenses and negotiating with various suppliers. So one thing we've got going at the moment is a member of staff has been seconded a day a week to look at sort of those

central electronic resources. A professional member of staff, information adviser, who'll be doing a day a week at the moment looking at sort of service wide issues.' [135401, text units 92-103]

'... I'm mostly half and half really, eresources and distance learning. I think if people had realised that, I think previously it was managed by, we had systems librarian and by the subject librarians themselves as part of their normal work, you know by evaluating (unclear) all that kind of stuff. Looking after the intranet and yeah again I think it was political will of the time too for the distance learning part and I guess they thought they would stick it altogether and get a fulltime post. And yes someone to look solely at what, well not solely, someone (unclear) e-resources and managing that.' [112401, text units 103-112]

Training is an issue with EIS use. With a greater availability of EIS the FE sector is now having to deal with not only training LIS staff in the use of various EIS but also the teaching staff and students on a greater scale than was previously carried out.

'We have up skilled the staff. There are more professional librarians, there are younger professional librarians that have just come out of universities and

their contribution is (unclear). They've only been here since September. He's been here a bit longer but there's another 3, and 1 in particular is working heavily within Blackboard. And she's working with Infotrac in Blackboard and is exploring ways that we can link in. And with teaching staff. We're not working in isolation I think we should stress that.' [117401, text units 158-182]

'.. at the moment it's fairly small scale and just added on to jobs people are already doing. In future, of course, I think that's bound to change. At the

moment we have one and a half clerical staff who deal with our print-based journal resources, and I tend to deal with most of the electronic stuff, but at some stage in the not so distant future we're going to have to review that, but I haven't

gone that far yet.' [131401, text units 102-111]

'I've just used one now to support the Public Service students who are doing some research on the Vietnam War and it just came up with masses, including the links to websites..so I sent that off to them yesterday. We've really found them beneficial. We've actually run several sessions to kick start projects, with staff. Of course, we're not only having to train ourselves now, we're having to train the staff. So it's had a lot of implications, for user education as well.' [121401, text units 28-37]

'...the college has gone from a Learning Centre based approach to a teaching which means you've got combined IT teaching going on so the access to the ejournals and the databases outside of the Learning Centre enables tutors to become more involved as well, although that entails some TRAINING!' [128401, text units 2-43]

4.3.3 Publishing and licensing issues of EIS

The previous complaints from cycles 1-3 about the restrictive licences offered by publishing houses and the costly pricing structures are being echoed in cycle 4. Decisions on purchasing are mainly made on cost and value for price. One institution has been rearranging suppliers purely on an interface factor to make life easier from a student perspective.

'... the licensing when we first started out was a big problem. And it puts me off purchasing anything else now. It's a definite restriction. And they're shockingly expensive these products so we've only got the three. We do keep looking at other ones but not keen and the funds are not great. Funds do fluctuate and if you start with one of these products you've got to keep going on. Mintel was an odd one wasn't it....But we made a decision to get rid of the online version because it was just one licence and it promoted other products which we didn't have and gave a taster and, of course, they wanted those products. Comment on the fact that I don't think that the college strategic policy for IT is strong enough and gets overturned by departments. So for example departments purchase their own online resources without consultation with us and we don't necessarily know what they've got. [117401, text units 228-245]

'I should never ever be subscribing to an academic journal electronically I don't think. We'll never have the funding. We will always get the ones we want via (name) university. That's the only way to do it..' [118401, text units 652-655]

'Well before buying I canvas opinion and we really push it in the departments to get them to look at it – send them sample pages etc. We do have a criterion .

...because I haven't got a massive budget, if I'm buying into these things they've got to be multi-usable and support as wide a group as possible. The Leisure and Tourism module from City Mutual was a bit of an exception but it's because it supports a very, very active curriculum area where they do an awful lot of research and they use the LRC tremendously. It's ongoing really.' [121401, text units 181-191]

'..As for long term, short term, you know, it depends where we are in the cycle; if we have enough money. Does it look like, you know, reasonable value, are they going to use it for the next five years.' [112401, text units 159-162]

'We've just changed serial suppliers to Swets,.... And Swets now are also offering products in this market and Ingenta's another one and we're trying to, we are trying to rationalize, from a student's point of view they've got to do all these different searches, you know different interfaces. And we're trying to pull it to just a couple to make it easier from the user's point of view.' [135401, text units 168-175]

The JISC/CHEST initiatives are taken up in most institutions with the FE sector favouring Infotrac as a good catch-all service and LION for a specialist subject areas (English) and City Mutual (Business, Media, Leisure & Tourism). National Learning Network materials are not available within Wales (as yet).

'... we took them out with NESLI when NESLI deals when they were running. We signed up for kind of semi-committed to some of the NESLI2 deals as well. Though I think they're really maintaining what we've got already. Again as with

any type of NESLI or CHEST or JISC deals is you know, you look, you know the choice is, choices are as ever influenced by teaching areas. You have a fund,

will it support what we want? How much is it, that type of thing.' [112401, texts units 210-216]

'What we normally do is go to CHEST first, CHEST is the offshoot from JISC and we tend to go to them first and see what's on offer. But sometimes we can negotiate, as I said earlier, a better deal for being smaller and so sometimes the

CHEST deals because they're negotiated on behalf of bigger institutions, we can't always benefit from them. So sometimes if we go direct we can get a better deal so it, basically we go on cost and I suppose the support services, but they're usually pretty much the same whatever the deal is. It's mainly on cost.' [136401, text units 163 170]

Consortia collaboration does not figure as much within the FE sector as in the HE sector. However, even within HE, there is little evidence of consortia purchasing this cycle⁵. Feelings given are that any benefit does not outweigh the problems associated with consortia purchasing i.e. lack of speed in decision-making and scale of numbers required.

'No I don't think so, no. You mean kind of buying, buying new resources? No, I think I would know if we did, none that come to mind. We'd recently been investigating whether we wanted to go for this resource called Maths Signnet with a few other universities but I think that won't come off. I can see where, I don't have any objections to it, to working in a consortium because you know you generally get things cheaper. Generally it would work I would think. But no I don't think, we do resources at the moment, ejournals and purchasing yeah but not resources, no.' [112401, text units 189-197]

'We're working together and we've put in a funding bid and got a huge amount of funding to do Hybrid Library between us. And that's been really interesting and we meet about 3 times a year. And I got the funding to buy our Heritage Library system. I got half the money from that funding bid and we've all updated our library systems and we're going for something called, it's got a DSW 40 or something, it's when you do a search on my OPAC catalogue, you can do it across all the colleges catalogues at once and there's a, I really must remember what this term is, and we're setting this up and that should be running by the end of this year so a student at any of the colleges will just do a search and it will throw up the search across all the college libraries. And there are other things going on with that DSW, the hybrid library, we're trying to sort of improve all the electronic resources and the availability to them, it's only for HE students but it'll have a knock on effect of the ease of their use of these resources and it should be very, it should move the thing forward quite a lot.' [118401, text units 334-350]

'I don't really know that they would. At the moment it's to do with scale isn't it, and because we don't have that many compared with an HE institution, it's not a particular problem. It may grow as we put more and more resources into electronic, as opposed to print-based and it becomes a problem, that's when it'll have things like staffing implications etc. At the moment it's under control.' [131401, text units 75-86]

'Yes we do with [name of university] University because we're a franchised college. We have access to Emerald and AB Inform through them. I've written here "...a good idea in theory but a bit fraught in practice".' [13340, text units 116-119]

⁵ Rowse, Mark. The consortium site license: is it a sustainable model? *Health Information and Libraries Journal* 20 (2) (2003): 104-107.

'I sit on HEPCW, the Higher Education Purchasing Council Wales, the library group and we've looked at collaborative purchasing for electronic resources and it's normally just fallen down on things like the licensing issues. And it hasn't really gone anywhere.' [135401, text units 178-181]

Thoughts on new initiatives concerning academic copyright and different funding or subscription models did not figure highly with this cycle's sample. Only one interviewee was aware of various initiatives currently operating e.g. Open Archives Initiative in the U.S and the archives/eprint projects held at University of Glasgow. However, the sample in this cycle was predominantly taken from FE institutions.

'I haven't really got enough knowledge on this bit. It's a comment. I know various institutions are doing things like open access archives and so on and authors are depositing stuff locally but I'm sure there's various initiatives, I can't remember what they're called now. When I saw the question I thought, that sounds like, and I think it was something called Open Access or Open Archives. I think it was University of Glasgow I saw something where to get, is it SPARC, publishing organization which is looking at trying to reduce the costs of journals by the academic either lodging it locally so that people can look at it that way. I think I'm getting the details mixed up but I'm sure there's an initiative. That question just reminded me about it but I haven't really got into it.' [135401, text units 327-339]

4.3.4 Evaluation of EIS and patterns emerging

For the fourth year in succession, in the main, evaluation is taken to mean reading the user statistics from EIS suppliers. There are certain institutions that are involved in collecting statistics for Sconul and CoLRIC (Council for Learning Resources in College).

'.. it's no, we do things like, because I'm not aware of any formal feedback, we do have specifically Libra surveys here. I think last year was Nursing and this year is postgraduates. ... and have just started within the last 3 or 4 months, we can take statistics from IBIS on the number of accesses to resources. This was clicked on 17 times this month...it's a kind of rough and ready way of calculating things. We also gather stats for Sconul which is not under my hat, it hasn't been under my control. It's been shifting towards me but there are, you know, statistics based on material we get from the database suppliers themselves. And we collate those once a year or every six months and they sit on a general server.' [112401, text units 307-309, 338-348]

'Um, we had a feedback, general LRC feedback questionnaire about two months ago and there was an Infotrac question in there so we got feed back that way as well.' [117401, text units 351-353]

'I think that now that we're on UPDATE via EDINA we get monthly reports on usage. I'm sure that comes through and I think quite a lot of things like the JISC things would probably be capable of giving us information on usage. I just delete the emails that come at the moment because I'm not interested in it but that should be something I should be making I should be making a note of and it's a sort of statistic that you would want to see an increase. It's like showing your interlibrary loans are increasing over the years. So I should be doing something about that but at the moment I don't take any notice of it at all.' [118401, text units 662-671]

'We've done quite a lot of work on this, only in that we've been working with Colric on impact targets and as part of the work for that we've, last year, targeted a small number of programme areas for their use of ILT including electronic sources and their knowledge of, and use of the Internet and Intranet – and we got the ILT groups to fill out a questionnaire which made the students assess their own skills in all those areas and from those responses we built a profile of the groups – and then sent those back to the teachers with comments on how we

could build on this and where we could go e.g., quite often, the assessment of the skills would dip where it came to knowledge of Intranet or use of online databases, so we'd then run special micro-sessions looking specifically at accessing the Intranet properly in their curriculum area accessing the relevant online databases – this sort of thing.' [121401, text units 261-277]

' We conduct a survey annually. A Library and Information Services survey, and there's questions in there on effectiveness of electronic resources just the same way as books, journals and so on. So we get feedback through that. We also get feedback through things like course committees, informal feedback from students that way. And we also ask our information advisers to sort of see which services are being used and so on. That's a bit crude, that's more sort of subjective means of obtaining feedback.' [135401, text units 277-284]

There is a varied picture emerging this cycle with user trends. Some institutions reporting their hard copy collection use is increasing, others reporting they are decreasing and others saying they are static.

' Um, it's (hard copy collection use) been going down and down and down. Reducing, reducing, reducing. But we've now moved it all and we're hoping to try and stimulate a bit more interest. We made a decision to keep a hard copy that appears on Infotrac because we know other libraries where they've cut.' [117401, text units 292-296]

' No book loans are going up. But that's because we are investing quite heavily into books. Student number has gone up dramatically this last year. But even so book stock was being used last year. Curriculum 2000 made a big impact on us and we turned, well we continually turn round all the book stock as it was very poor, so we breathed new blood into and it's having an impact.' [117401, text units 374-381]

'(ILLs) Very static. I think they might improve this year because we've got a better system and I'm sending out recalls and getting books back quicker. Reservations are improving. But I mean we're talking such tiny numbers. British Library very, very, small. I try not to encourage that because it costs money.' [118401, text units 674-678]

' That's very difficult, we've looked at that because people have asked us..I haven't got numbers so I know this is valueless because I've got nothing to back it up – I haven't noticed a drop – and certainly not a drop in book requests for purchasing from the departments, they're still the same as ever. I have been spending more on books, although our budget has been going up but our expenditure in relation to books hasn't dropped, it's still going up.' [121401, text units 301-309]

'.. we have noticed that our book loans seem to be going down gradually, which does seem to be part of a national trend anyway in FE and I imagine it's being offset by the increased use of electronic services, yes.' [131401, text units 152-154]

' So I think at the moment that the fact that print charging has come in is a bigger change than electronic resources, if that makes sense. That's been the big driving force behind printing and copying more than electronic resources. We've found that things like inter library loans have dropped over the last two years and we're attributing some of that to the fact that we're taking far more electronically. So that is a cost which has, which we have got evidence to show how strong.' [135401, text units 265-271]

Right, well that's quite interesting because we had the general feeling that we had fewer people visiting the library and fewer book loans. But when we actually looked at the figures I should think that probably it was more a levelling off rather than a reduction. We do, I know we do have more people using electronic services remotely so they don't need to come to the library now to look things up.

But the book loans... My, again that hasn't fallen off but I think it's different users. I think we have a proportion of FE students here and also we have quite a lot of associate students and mature students who probably are more likely to use books rather than electronic. So we've still got quite a big population who go for books first. In fact even our undergraduates I think go for books first and so the book loans have remained fairly high although they're not growing.' [136401, text units 293-310]

4.3.5 Web site development and maintenance versus VLE

There is an obvious switch this cycle from developing LIS web sites to integration with VLE/MLE. In the FE sector it is noticeable that some institutions have more or less bypassed an LIS web site whilst others are running a 'presence' on the main institution site with the main information only being available from the intranet. One interviewee pointed out the difference between the marketing aspect of the corporate information given on institution sites and the necessary operational aspect of the LIS sites.

' Well the library has as presence on the, what's called the corporate website here, the internet, and we have a presence on that. But it's a very basic presence because the whole kind of thrust of the college is to put as much information on, we've got this thing called IBIS, you know, so why not use it as much as possible. So there is a very basic presence on the library internet, on the college internet site.' [112401, text units 128-134]

' We have a listing of resources. I'm not surprised students didn't know anything about it yesterday because it's only the LRC information that's up to date. All departmental information is now absolutely (unclear) because of Blackboard... What we have developed is an interactive guide to the LRC, brings in the catalogue and brings in Infotrac. So we get as many students as possible in September to go through it (unclear) teaching staff there as well so we're trying very hard to sort of get them interested. ..' [117401, text units 185-188, 202-205]

' We have information on the Intranet – we have a section. One of my staff, whose main responsibility is publicity, keeps a weather eye on it to make sure it's up-to-date, but we're prompted anyway via the Resource Base Learning Team who maintain it. All the staff have an input, because of the work they do with the curriculum link because we also not only have an area for the LRC where we've got our opening times and services and a virtual store, and this sort of thing, but we are also responsible for liaising with the Resource Base Learning Team to put information on the Intranet within curriculum areas – things like web links, that sort of thing. I've got someone coming in from Creative Arts this week...we're working together to put together a help sheet on the Intranet with links to information sources.' [121401, text units 159-176]

'... we don't have a library web site. We have a college web site which we have a few pages on and that's dealt with by a web manager.' [131401, text units 65-68]

' Currently there's no web site for the library but this is in hand... I want to utilize WebCT as well so that we've got links to that.. I want to get our user education leaflets up there and stuff like that.' [133401, text units 92-96]

' This is another one which we haven't sort of got central control over. What we've done is set up another working group, a library home page group which is chaired

by a campus librarian. And it's their responsibility to develop and maintain the website. What we've done is within that group we have the person responsible like and editor for the web pages to which all changes must go. He, that's only just one of his responsibilities. He's also an information adviser and each campus has a member of staff who feeds information to this person that they think should be on the web site. We re-designed it about 18 months ago, it's due some evaluation and this group will carry out that evaluation. They work at (name). Most of the web is driven by marketing. It's seen very much as a marketing tool. And the web master for want of a better word, is within marketing. But obviously from a library point of view it's not a marketing tool, it's an operational...a way of delivering an awful lot of our services so we've tended to work, we work with that person very closely. And various reports come out, number of hits and the library page is always the most hit page within the university. Which is great but it does mean you've got to make sure it's up to date and relevant and so on. So we need to evaluate that as well. ' [135401, text units 137-157]

' Right, well we don't have a separate website, we have a page on the college website and also a college intranet for staff and for students. What we've done up to now is we normally send content to the webmaster and he puts things on but we've had a programme of training for lecturing staff in each department, putting, for them to put information onto the web, so we're moving more towards designing our own.' [136401, text units 81-87]

Most institutions in this cycle have introduced or are currently piloting a VLE. Obviously, some are further ahead than others but, on the whole, very few use the interactive aspect of a VLE. There is a trend for institutions to use them as departmental/module information 'dumps'.

' We have two sites within Blackboard. We have a staff site and a student site. Catalogue and student guide in there. This is where it's starting to change slightly. One of my colleagues is trying to go for this subject approach and then reference resources there, you see Infotrac's there. It's still, I'm not sure if I agree with Infotrac being quite so buried. I might try and move it to the level before it. But that's the thing with Blackboard, is (unclear) you can be about 10 clicks away from a resource. Things like LION need to go on there. Still only half the stuff that we even had on the intranet hasn't made it on to Blackboard yet. ' [117401, text units 190-200]

' But the HE group is growing. That's very, very demanding. And that's what all this is coming. And also the whole push...distance learning and trying to get it in Blackboard which is the... I think we've got something called DODDLE and we've had it for a couple of years which is similar to Blackboard but not as good and I think they've bought it and they're now going to abandon it and go for what everybody else has got. But nobody's taken that up. I was talking to my line manager, only last week we met and he's the Vice Principal and he knows nothing about IT or he pretends not to, he's my age and he keeps his head down on IT but he is aware there's a lot of funding available for initiatives to get course work and not just putting the course work flat on but making it interactive and having chat and nobody in this college is doing anything about it and I'm saying look this is really becoming urgent and he's saying I know because there's a lot of money available out there that we could be getting what do you think we should do? And I said we need somebody from a library background, somebody from IT and an academic and set them up and give them the time and the money and let them do it. I think that is the way and just pilot one department or one course.' [118401, text units 234-252]

' I'm not actually involved in the decision making but I contribute my views. My line manager is the ILT and Curriculum Manager so it comes within his remit, obviously advised by the Network Manager which way to go as far as VLE is

concerned. We've been holding back with only one toe dipped in the water waiting for other technical issues to be sorted out like compatibility etc. We're actually on the verge of deciding which one to go for – like Blackboard or whatever..but I'm not actually party to that decision making.' [121401, text units 363-389]

'... we have got Blackboard and I have been invited on the working group that they have – it's only been running for about a year. At the moment, all I've been doing is attending meetings – we haven't actually got a presence on Blackboard although Blackboard is

one of the resources used within the library but only to a very small percentage in terms of the total use of Blackboard. Most students either tend to use it in class or at home.' [131401, text units 165-168]

' We work very closely, we've got Blackboard here which has taken off considerably in the last two years. I think about 50% of all students now have a module on Blackboard and they love it. The students really think it's excellent. Some people use it just as a document dump... Yeah, just put notes and lectures on there. Other than using it as (unclear) in a much more interactive way with assessments and we've recently had in the Learning Centre here an exam with 150 students using Blackboard as a formative, or summative assessment I think it was, as a pilot to see how it went. So it's starting to infiltrate methods of teaching and learning here. What we're currently working on is how can we link electronic resources into the modules. So what we're going to be doing is getting involved in the staff training. So when staff are trained on how to use Blackboard there'll be an element of training on how to link Blackboard to the library resources.' [135401, text units 375-389]

4.4 Section highlights

Very little has altered since the last cycle. The concerns of budgeting for increasing costs remain. There are more comments on how budgets will deal with ever increasing student numbers and this is a particular worry for those institutions currently dealing with impending amalgamation or upgrading of status where it affects the purchasing scale for licensing. The main points emanating from this cycle are:

- The change from LIS web site development to VLE/MLE integration, with FE colleges leapfrogging the 'OPAC portal' stage⁶.
- Implication of EIS user education within FE sector now that EIS availability is increasing
- No evidence of 'dabbling' with new purchasing initiatives/models within the HE sector although there is some awareness
- Vary varied pattern of EIS affecting hard copy collection use with some reduction in use, some with increased use and some static

⁶ Awre, Chris and Wise, Alicia. Portal progress. *Library + Information Update* 1 (6) (2002): 46-47.

5 Action research

5.1 Aims and objectives

Six sites were selected for action research studies in Cycle Four. Of these, three were identified from research work conducted in Cycle Three. The proposal for the action research for Cycle Four envisaged a range of institutions, including rural, county town, and inner city sites.

For the action research, visits might have to be arranged at short notice. This meant that the sites would have to be based around Bristol/Bath, W. Midlands, South and West Wales. It was envisaged that one researcher (based in Bath) would manage two action research projects in that area, another researcher would manage two in the W. Midlands area, and another researcher would manage two projects (West and South Wales).

Interventions varied both in format and scope. The aims and objectives were, as far as possible

- to examine the process of benefits realisation for EIS
- to develop appropriate performance indicators which might be used in a Balanced Scorecard evaluation framework.

5.2 Action research site A

5.2.1 Aims and objectives

The main aim of this action research study was to improve the uptake and effective use of electronic services and sources by students studying on the HNC Mechanical Engineering course.

5.2.2 Background

The college serves an urban area of South Wales and supports 14,572 (4,079 f/t & 14,446 p/t) students operating from three main campuses.

5.2.3 Methods

The methods used at this site were principally interviews, focus groups and questionnaires.

An initial meeting held during Autumn 2002 between the researcher and the Curriculum Manager for Engineering, and this was followed later in the month by two stakeholder focus groups. The situation as it presented itself at that time was considered, and issues and potential opportunities for interventions were identified.

The first focus group was between the researcher and first year students with their tutors and the librarian present.

At a later date the researcher met with the tutors and the librarian.

All students were first year HNC students, only a few weeks into their first term. They had been identified as a group likely to be aware of their weaknesses and lack of knowledge about use of EIS.

5.2.4 Findings from initial meetings

The following issues were apparent:

- students and staff receive little formal training and support aimed at helping them make effective use of EIS for learning. Library induction in the library *'touches on the OPAC'*.

- the HNC students attend college only one day a week and do not have the time to either access computers or search for information. However access to computers outside college is not (usually) a problem.

'[Computers] readily accessible at work and I've got one in the house. I'd rather use the one in the house than use the one at college to be honest with you. Because if we've only one day, we haven't got time on the day to go there.'

'...one [student] hasn't got a computer at home, can't use one in work, I know he has used County Library facilities.'

- library opening hours are inconvenient, the library closing before the students finish lectures.
- password problems do not allow for off-site access to the OPAC.
- lack of easy access by the students to computers in the college.

'Many computer rooms are used for teaching rooms as well. So if those rooms are full where does a student go?... 'We're creating the structure for them but the availability of the room isn't there because of teaching' .

- the department is keen to introduce an MLE and VLE. However it is proving difficult to convince management of the need.
- licensing restrictions do not allow franchise students or staff access to the franchising college's electronic resources, other than the online catalogue. College library and department staff do not know how to manage this situation.

'It was terrible. It was one of those sites where everything was on-line for students to access, notes, everything was there, assignments anything at all. If you were in (name) you could access it. Anywhere else, no'.

- ownership of resources cause problems. The Engineering Department has subject specific resources which they purchase. These resources are only accessible to engineering students when in the department and not externally.

At the time, subject specific CD-ROMs were not networked. Departments were allowed to purchase CDRoms for their own use within department. Internet access was available to students in the library on showing their student identity cards. The intranet linked users to the OPAC (Webpac), to course materials including Engineering and to 732 'useful websites' of which 15 were Engineering related including EEVL.

Students received little guidance in class. Booklists were provided by tutors with lecture notes being by far the main means of obtaining information. Useful website addresses were shared, but tutors were under similar time constraints to the students.

'Time is a big thing, we don't have the time and when...we find a decent site we'll tell them obviously but we don't have the time actually to go on the Internet'.

The library is very book based with an OPAC. Students generally see no need to use the OPAC, as all their HNC books are shelved together in one section.

There was little awareness at this site of what could be offered by the RSC. There were no handouts about electronic information resources in the library. An Engineering Resource Guide is available on the RSC website but library staff and engineering tutors appeared to know little about the RSC and its services.

Users are encouraged to ask the library staff for help and staff and students emphasise their helpfulness. Students learn skills by *'trial and error'*.

One tutor saw a role for the library

'I think we're looking at the library as being the centre of this lot, for the simple reason as you say if we build up sites and things like that in the library, the library services is organised. There is a possibility of, doing something like that [box files] for websites They can go into the library, if the books are not there, well fair enough let's look at the websites they've got. So you get information from us, ...from the students so those lists are growing all the time.'

5.2.5 Selection of Intervention

Findings indicated the importance of giving help to students in a form suited to their circumstances as part time, day release students. Lack of time and other difficulties re access to the library and college resources during their one-day attendance at college highlighted the need for an intervention that could be used outside college premises and hours.

The licensing restrictions present a more difficult problem, but the intervention could, it was hoped, reduce some of the dissatisfaction over access to resources that students might otherwise voice.

Students acknowledged they needed pointers to relevant electronic information.

'It wouldn't be wasted, When you're searching for something you don't actually know what you're going to get and whether you're searching the right things so it might be useful on the course, they give you pointers as to where you may need to look, useful places to look at.'

5.2.6 Implementation of Intervention

In order that they could familiarize themselves with key Web sites in their subject area, a list of engineering websites for the students to use, in their own time and at a computer easily accessible to them, whether at work or at home, was developed by the researcher. using models from an previous action research site (Appendix 5.1). Copies were sent to the Curriculum Manager for distribution to the 60 HNC students and their tutors during mid December 2002, prior to their first assignment.

5.2.7 Evaluation of intervention

Evaluation was carried out through a student focus group, complemented by a questionnaire survey (Appendix 5.2) and was timed to take place after completion of their assignments.

In March 2003 the researcher met with some of the students and a questionnaire was distributed amongst all students. Of the 60 questionnaires distributed, 35 were returned.

5.2.8 Evaluation findings

Asked if they found the list useful, 26 students found the list useful and 8 did not. 1 student did not give an answer.

Reasons for usefulness were given as: 'easy access to relevant websites'; 'used some sites for assignments'; 'time saver' when looking for 'course related subjects and relevant information' and 'gave some idea of where to look and what was required'.

Those who did not find the list useful: 'preferred to use[d] search engines to check web'; 'used course notes and books' or found the list 'not specific to the assignment topic'.

Help was required by two students. They did not indicate from whom.

The location of workstation used to find information varied: 25 home, 8 office, 3 library, 11 classroom, 1 laboratory. 1 did not answer.

Five students used computers at both office and home, 1 office, home & classroom, 1 library and classroom, 1 office and classroom, 4 home and classroom, whilst 1 used office, home, library, classroom and laboratory.

Asked if they would refer to the list again, 25 students indicated they would and 10 indicated they would not.

Desired improvements included: 'given it earlier in the year' , and 'a list that covers more of the course topics'.

5.2.9 Impact of intervention

The evaluation indicates that the intervention (a comprehensive listing of web site sources) served the students well. The majority of students found the list useful and would refer to it again either during their studies or their work. The format of the intervention enabled the students to carry out electronic information research off campus, using computers more easily accessible to them.

Potentially the web site listing serves to improve the uptake and use of EIS by reducing the barriers to change:

- difficulty accessing computers at college.
- difficulty accessing electronic resources externally.
- lack of research time at college.

Judging the success of this intervention, or similar interventions can be measured initially in terms of satisfaction and whether the barriers to access were reduced. From the organisational perspective, using a performance measurement framework based on the Balanced Scorecard⁷ the questions to answer are:

- what matters to our customers?
- what business processes (internal processes) should we be good at?
- how can we learn and grow as an organisation?
- how do we appear to our 'shareholders' – are we succeeding financially?

Some of the pointers which emerged for discussion from this intervention were

- development of website listings/information leaflets for all subject areas – is this a useful direction for library staff effort?
- more equity in resource provision was possible – this might help the college achieve some government aims for lifelong learning.
- informing tutors who are then more able to help students – a two way process
- more flexibility for students when researching – makes study easier and more efficient for them.
-

Student (and tutor) attitudes towards the use of EIS are influenced by the lack of access to facilities and resources, and restrictions placed on them by their college timetable.

Ideally these constraints might be alleviated by:

- the development of library EIS services and support. Contact with the RSC would ease the situation, with both department and library receiving the benefit of RSC support and services. The trickle down effect of training tutors may then help students during class contact time.
- clarification of the situation re franchised resources available through the franchising college.
- extending library opening hours on the appropriate day and to include Saturday opening.
- access to subject specific resources by students throughout the campus via the library, the Flexi Centre, classrooms, and externally via the intranet. The

⁷ Kaplan RS and Norton DP. *The balanced scorecard: translating strategy into action*. Boston, MA: Harvard Business School Press, 1996.

development of a VLE would ease access to resources by allowing external access.

5.2.10 Conclusions

Developing performance indicators based on the Balanced Scorecard requires four indicators (customer, internal processes, financial, and learning and growth). From the pointers which emerged, and the initial problems identified :

- student customers save time by getting access to required resources when and where required. The percentage of tailored resources available to students off campus is an indicator the college could use to represent this customer perspective.
- internal processes are how the library staff work with the academic staff, and also with the RSC, to develop better access to EIS for students. An initial performance indicator might be the number of meetings between the library and departments, and number of contacts between the RSC and college staff, but the emphasis should be on the outcomes of those meetings, and the later performance indicator should shift to incorporation of EIS, e.g. Web sites, and use of RSC subject guides in course materials.
- the financial perspective is related to the licensing problems associated with the partnership between the FE college and the HEI. This is a more difficult problem to resolve, but the performance indicator could be the percentage of HEI licensed resources that the FE students and staff can access as easily as if they were in the HEI.
- the learning and growth perspective concern the competencies of college staff in supporting such e-learning. Performance indicators could relate to the competencies required to develop and maintain Web pages or the proposed VLE.

5.3 Action research site B

5.3.1 Aims and objectives

The main aim of this action research study was to improve the uptake and effective use of electronic services and sources by students studying on the BTEC ND Popular Music. (Renamed ND Music Practice) from 2002.

5.3.2 Background

The site was a large inner city college, but one noted for its entrepreneurial approach, and very dynamic leadership.

5.3.3 Methods

The intended methods at this site were principally focus groups and interviews. Focus groups with all stakeholders, though arranged, did not take place due to difficult personal circumstances for the tutor concerned.

A meeting was held during October 2002 between the researcher and course tutors.

This was followed by a meeting between the researcher and the Learning Centres' Coordinator.

5.3.4 Findings: information skills support

Aims and objectives of the general information skills programme. To formalise and to be able to credit work and skills that many students carry out in relation to the courses they are studying, the Learning Centre has developed a flexible, taught, resource-based introduction to library research and information skills including information technology

such as the Internet and CD-ROMs. As a bridge to study for those coming from school to FE it provides an introduction to the Learning Centre, its books, and information available in electronic format such as CD-ROMs and the Internet. There are plans to develop a unit covering Infotrac and the RDN, ejournals and ebooks. The programme is also to be published on the VLE (Learnwise) in the near future, and is accredited through the Open College.

The programme is intended to support students in their independent study and flexible learning, to enhance the standard of their assignment research and to provide skills students can carry forward and benefit their studies elsewhere.

It is at the discretion of the departments and/or course tutors whether they make the programme mandatory or otherwise, and at what stage to introduce it to the students. Students can use specifically designed learning packages developed by Learning Centre Staff and complete it in six weeks.

Delivery: The Learning Centre Co-ordinator leads set introductory sessions. Students can then attend either as part of a timetabled, tutored class or on an individual self-supporting basis. Tasks are completed in the set work books which have an accompanying course book to help guide the student to the answers. Some tasks require written answers, others require printouts, work saved on floppy disk or tutor observation. The programme can be adapted to make the searches more relevant to the student's subject area. There are five units, and two levels

Assessment: Tasks are marked for understanding and accuracy by the programme tutor, who also looks at the students' knowledge of procedures used to find the information required. Regular course team meetings are held and cross marking takes place to ensure all tutors are marking in the same way. Evidence is presented in the form of a completed workbook, printouts and, depending on the unit, floppy disk.

Outcomes The programme has brought prestige to the Learning Centres and the staff, and good relations have developed between the Learning Centre staff, students, and academic staff. Up to the time of the initial meeting, 900 students had participated in the programme, 80-90% of whom having worked through the levels covering EIS. Surprisingly, there has been a positive effect on non-EIS use of the library as well as 96% of the students indicated that they were pleased with the bookstock and intended making more use of it.

Information Skills - BTEC ND Popular Music (re-named ND Music Practice from 2002)
Students following the course have not followed the information skills training programme offered by the Learning Centre.

Since 2001, the course tutors have devised an assessed, curriculum related Internet Music Research Exercise designed to develop and assess student skills in obtaining information from the Internet, and to demonstrate their ability to use information effectively. There is also a one- year Specialist Subject Investigation project, which requires more in-depth investigation of a topic.

5.3.5 Selection of Intervention

It was decided that the action research project would benefit from focusing on the Internet Music Research Exercise which already forms part of the course curriculum and is assessed. An amalgamated Specialist Subject Investigation and Internet Music Research Exercise generic worksheet was developed by the course tutors, in collaboration with the researcher, and given to the second year students. The first year students studying on the re-named Music Practice course, had already been given the work-sheet which dealt only with the Internet Music Research Exercise (a consequence of the timetabling).

The outcome would help decide whether the Internet Music Research Exercise would benefit from a closer relationship with the college programme. If the college programme does not appear relevant to the music students then a more focused programme would be better, but that is more costly in terms of staffing.

5.3.6 Evaluation

This is to be undertaken by tutors at a later date. Tutors are of the opinion that the students have the abilities to tackle the exercise effectively.

Feedback from course tutors is yet to be received by the researcher. Contact with the college will resume at the start of the next academic year.

5.4 Action research site C

5.4.1 Aims and objectives

The aim of this action research was to make the Key Skills programme undertaken by students more relevant to their needs.

5.4.2 Background

The FE institution was a medium, general and tertiary FE college in a rural 'new' town. In 2000/2001 the college had 12,869 enrolments with 11,454 part-time and 1,415 full-time students.

The college is serviced by a very good LRC and Intranet called the 'Extranet'. This holds subject specific themed links on the Internet comprising organisational sites, on-line encyclopaedias, dictionaries, News channels and on-line daily papers via Proquest. Key Skills information is also held on the Extranet giving information on search techniques and Boolean searching with practice exercises. Following a bad Ofsted report the previous year, the Key Skills programme has been de-centralised and taken back within departmental control.

5.4.3 Methods

An initial meeting was set up with the Programme Co-ordinator for the AVCE Health Studies course to discuss the possibility of carrying out the action research. It was decided that looking at their careers assignment would be preferable. This assignment was based on career enquiries within the health and social care sector. A focus group session was set up before the Christmas break where the group of 16 students were asked to discuss their use of computers in college and at home; how they felt about facilities at college; whether or not they used the LRC services; whether or not they experienced problems when searching for information; whether or not they used the 'Themed Areas' on the Extranet; what they felt might be useful to them in future.

5.4.4 Findings

Comments from the focus group revealed that there were a few 'technophobes' within the group whose main reasons for not wishing to use computers were that they were boring, but on further probing revealed they were lacking keyboarding skills, so computer use took them too long. Their attitude to the Key Skills sessions was that they were also boring and they were not teaching them how to use computers. Some found computer use more interesting than writing but found the spellcheckers annoying. Most of them claimed to use email in college on a daily basis and loved email although there were restrictions on the college network disabling students from sending out attachments. Three quarters of the group said they were connected to the Internet at home. When asked about their use of the LRC, one commented about not liking it because a particular member of staff in the LRC 'picked on them' telling them to keep quiet all the time! No-one claimed to have used the OPAC (Heritage system) and they saw no reason to use the LRC as 'now there was the Internet'. It transpired that they use a particular textbook

for the course and see no reason to explore beyond that textbook. Roughly half of them had seen the 'Themed Areas' on the Extranet but the other half claimed not to have heard of them or seen them. None, however, had made use of them for anything. Typical Internet research was for demographic information but most of them complained they could never find what they wanted on the Internet – low specificity problems.

5.4.5 Selection of intervention

When asked about what they might find useful they all agreed that a course Web site would help with handouts and programme information, crib sheets and tutor comments. It was noted that the X: drive on the network was a shared drive for students and staff for this purpose. However, the downside was that few staff used this facility and failed to post information for the students.

Following this, the students were then informed of the forthcoming assignment and that we would be looking at how they collected the information. Evaluation sheets (Appendix 5.4) were then sent to the Programme Co-ordinator and 8 students from the original 16 responded (50% response). Table 5.1 gives the replies to the evaluation sheet.

Category	Response (N = 8 replies)	
Guidance on where to find sources of information	Course Tutors	8
	Client Guidance	0
	Friends/Family	5
	Library Staff	1
	Other	1
Information sources used	General Internet Sites	7
	Library Books/Magazines	4
	Kudos Careers Database	1
	Organisation/Company Leaflets	6
Help required	NHS information & structure	2
	Tutor	3
	Emailed Organisations	1
	Mental health info from their father	1
Where research carried out	At Home	6
	At the Library	3
	In the Classroom	1
	Other	0
What would have been considered helpful	Outside visitors i.e. Nurse	2
	More information	1
	Computers available when needed	1
Internet sites used	RAFCareers.MOD.uk	1
	Ask Jeeves	2
	NHS Careers	1
	Google	1
	NMC – NHS NursingZine	1
	DogPile	1
	Yahoo	1
	MSN	1
Further comments		0

Table 5.1: Evaluation Sheet replies for Institution C.

5.4.6 Evaluation findings

Quite clearly the course tutors are the main source of advice for these students, followed by friends and family. They do not use the Kudos careers database, preferring to use general Internet searching and information directly from organisations.

5.4.7 Next steps

To be reported in the next cycle.

5.5 Action research site D

5.5.1 Aims and objectives

The aim of this action research was to assist students to use EIS effectively in their Integrated Vocational Assignment.

The initial calls to the co-ordinator of the Edexcel Level 2 BTEC First Diploma in Animal Care resulted in the meeting being put back to the end of February, due to an Ofsted inspection. The project intention was well received and the go-ahead given to involve the 12 students doing the Integrated Vocational Assignment (IVA).

The IVA is a 4 task compulsory assignment requiring the students to apply knowledge and skills from their course to a practical, work-related situation based on the Industry and Organisations course unit. The first task requires them to gather information about the industry and state their sources of information. Tasks 2 and 3 are about understanding the industry legislation and financial aspects in order to write an article and give advice on setting up a new business. Task 4 is about how the industry has responded to the concept of 'sustainable development'.

5.5.2 Background

Institution D was a small, specialised, rural FE college recently merged with a local tertiary college, based on 2 campus sites. In 2001 the college had just over 9,000 enrolments with 757 part-time and 4,506 full-time students.

The campus library is very small and currently holds no electronic information services specific to Animal Care, other than Update the farming and countryside index and career software. Access to the Internet is available on computers in an ICT room within the library and a large separate teaching room in the college.

5.5.3 Methods

A meeting with the students in March confirmed that their main information research tools were the Internet and textbooks. When questioned about the use of the Internet list of organisational / company sites, given to them by the tutor, practically all the group bar one or two denied they had been given a list! They were duly reminded by their tutor, and then agreed they had been given a list of sites.

The intervention agreed was a help-sheet. (Appendix 5.5).

Evaluation questionnaires (Appendix 5.6) were sent for the students to fill in after the submission date of the IVA .

5.5.4 Initial findings

General comments when talking about use of the Internet centred around search problems. When questioned more specifically on this it emerged they had no advanced searching skills and their viewpoint was jaded by the experiences of not being able to find what they were researching.

5.5.5 Selection of intervention

The intervention therefore focused on assistance in making their searching more specific, plus providing some site addresses needed to complete the assignment. The help sheet included several more site addresses to help with their IVA assignment, together with a sheet on Boolean searching

5.5.6 Evaluation findings

These indicate that students did ask library and teaching staff for guidance. They used a variety of resources, working mainly in the College. The Kudos database was not used, the information obtained from a variety of other resources. It is unclear how much use was made of the Web site list, as all respondents used general Internet sites but only two indicated they used the list provided with the searching advice.

5.6 Action research site E

5.6.1 Aims and objectives

The main aim of this research study is to improve the information retrieval and appraisal skills of students studying for the BTEC National Diploma in Public Services (with possible extension to students studying for HND in Public Services).

5.6.2 Background

This small [1090 full time, 4745 part time students] FE college is based in a rural location. During the academic year 2002/03 the content and delivery of the BTEC National Diploma course in Public Services was being reviewed to ensure that it met national standards criteria.

5.6.3 Methods

Initial contacts identified that there was a problem with this particular course, but the course manager was new, and wanted to assess the problem fully before starting on any intervention.

Over the year, the observations during class were that students are not searching effectively. Even if told to look on a specific site for information known to be there (by the tutors) students will say they couldn't find it. Their skills at playing computer games and bypassing the filters to access illegal sites far exceed their skills at using the Internet to support learning. What could amount to plagiarism is rife and can be blatant.

The course manager felt that information and research skills should be fully integrated into the training programme and gave students a self-administered questionnaire in October 2002 (Appendix 5.7) to assess awareness of information resources and information-skills levels. The results of the questionnaire (Appendix 5.8) and assessment of students by their tutors indicated that, although students tended to have a high opinion of their own Internet search skills, they were not in fact skilled at effective searching and appraisal of information sources.

When asked on the questionnaire why they did not rate their search as 10/10 the following comments were obtained:

'Sometimes I don't know what words or info to type in to get the required information'

'Sometimes there are too many different sites. It's hard to find what you need'

'Sometimes the search engine doesn't recognise the command'

'Sometimes I cannot read through all the information to find what I need because there is so much info'

'Most of the time I find what I am looking for but some individual things I find hard to find'

'Because not all the time the info is there'

'Because sometimes it doesn't break down the information you need to know and it comes back with completely different topics'

'Because we can't always find the information we need on there'

'Because you can't always find the relevant information'

'Sometimes it takes for ever'

'10% chance it doesn't understand the words you type'

When asked about their perceptions of their searching skills, most students indicated that they were 'quite good' or 'fairly good'. Their training in Internet searching varies: nine indicated that they had received no training, one was self-taught (as the GCSE course had not seemed useful) and one acknowledged that an ICT course done the previous year had been helpful

Students are better at searching some areas than others. For example they are quite good at looking for information on law. This is partly because they have a very experienced teacher for this unit but also because there are a few, very accessible law Web sites that are regularly updated and the students find a lot of information fairly easily. On the whole there is very little information available on Public Services. The law and psychology sides are well-covered and also they use the Internet a lot for sports (anatomy/physiology/injury). Areas where they struggle more include 'Team-working Theory' and particularly 'Understanding Public Services'. For example, it is difficult to find information about the Police Force apart from recruitment information but these students would be looking for things like the Police approach to team-working.

Most students indicated on the questionnaire that some advice would be helpful.

'Yes it would so it is easier and quicker to get the exact information I need'

'Yes because it would be quicker & easier to find what you need'

'Yes. Would be quicker & easier'

'yes because it may help me do my work a lot more efficiently and quicker'

'maybe, it may help me be more efficient with what I find and also help me find alternate places to look'

'no 'cos I'm great. Don't need any help. Cheers anyway.'

'Yes because it would save time and also stop me from getting frustrated'

'yes in certain parts. Because then we could access the right info without having to search through rubbish'

'yes, in certain subjects because if we knew how to access the relevant info we could do it easier than having to read through rubbish'

5.6.4 Selection of intervention

After meetings with staff members it was decided that JUSTEIS researchers should be involved in producing a tailored training package focussing on developing appraisal skills and an awareness of the range of Internet sites that can be accessed.

The aim is to encourage independent searching by students that takes them beyond the first page of the first site they visit and to give them the necessary skills to identify and

evaluate the sites and information most appropriate to their needs. The questionnaire will also be developed and used as a benchmarking tool to allow evaluation of students' progress later in the year.

The training package will be developed for implementation in the 2003–2004 academic year and will be delivered by college staff as part of a weekly tutorial session aimed at developing research skills.

5.7 Action research site F

5.7.1 Aims and objectives

The aim of the research at this site is to assess the impact of the development of a Sports Studies section of the Intranet on Intranet use by BTEC National Diploma Sports Development and Fitness students

5.7.2 Background

This is a large urban FE college spread across several sites. Although access to computers is currently limited, Sports Development and Fitness students use the Internet a lot for assignments and for information about prospective employers. However, there is so much information on sport available on the Internet that students struggle to narrow down their searches and identify the best information.

5.7.3 Methods

Meetings were held with the tutors during 2002/03, and the outline of the action research agreed. Unfortunately work on the relevant part of the Intranet is not going to start until Summer 2003.

Baseline interviews with a sample of students at the beginning of the academic year would be followed by a second round of interviews later in the year to assess whether familiarity with the Website had impacted on the way students work or interact with staff and/or each other. Any further evaluation methods will be agreed during 2003/2004.

5.7.4 Initial findings

The Sports Development and Fitness tutors have strong ILT skills and are looking to develop a Sports Studies section of the Intranet. The site could be used to provide links to relevant resources but in a mediated form with useful information extracted and presented in a way that would appeal to the students. It is hoped that the site would also become the foundation for a virtual learning environment with information about assignments, work notes and messaging between staff and students. Staff hope to encourage students to interact with the Website by introducing activities such as quizzes that could be incorporated into students' revision process.

Work is beginning on the Website during summer 2003 and it is hoped that it will become operational during the academic year 2003–2004.

5.8 Conclusions – common themes from action research

5.8.1 Facilitation

Staff at a site may be happy to be brought together to do something they had not quite got around to doing for themselves. The role of the researcher is to act as the link person, to keep in touch, do some of the thinking and background research and generally 'oil the wheels'.

In other cases the facilitation takes some time to organise, and the JUSTEIS researchers have come to the conclusion that it is better to wait until the time is right for implementing an intervention, rather than forcing something through to suit our timescale.

5.8.2 Students' reflection on their information skills

This is something that is already happening at some sites (e.g. Site B) and beginning (Site E) at others. One of the main gains from the action research is the initial discussions where students are encouraged to reflect on their information skills in a more structured way. Despite what some senior managers may think is happening (as reported to CITSCAPES) students may not be as self-critical as they should be about their skills in retrieving, evaluating and using information.

5.8.3 Ensuring interventions are relevant

The need to make interventions relevant is obvious but the relevance has to be secured at several levels. For the teachers and managers some tie-in with current agendas (Key Skills, e-learning, widening access) makes the intervention worthwhile.

For the students, particularly those who have had bad experiences of formal education, the action research should focus on skills which make sense to them for their coursework. The usefulness needs to be immediately apparent.

5.8.4 Evaluation and performance measurement

The balanced scorecard framework usefully ensures that most important perspectives are covered. It would be easy, but not very productive, to consider evaluation in terms only of access to one set of resources, or the skills acquired to manipulate one database. For the action research sites in this cycle, the major first steps are those set out earlier (Sections 5.8.1 to 5.8.3). Once these are achieved, the next step might be to move on to consideration of performance indicators for the four balanced scorecard perspectives (customer, internal processes, financial, learning and growth).

From the data in this cycle suggested indicators focus on what is relevant to students, the need to support teaching staff in development of competencies for e-learning (a point reflected in the consultation document⁸ on an e-learning strategy (para 77), some joined-up thinking on licensing of resources, and collaborative working between RSCs and colleges, support for e-learning by library staff (Table 5.2). As e-learning develops, a new set of performance indicators would need to be developed.

Balanced scorecard perspective	Main benefit/barriers identified	Performance indicators
Customer (Student)	Students save time through access to resources off campus	Percentage of tailored electronic resources available on campus that are also available off campus
Internal processes	Academic and LIS staff need to work together, and also with RSCs	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.

Table 5.2 Balanced scorecard framework

⁸ Towards a unified e-learning strategy. Consultation document. DfES, July 2003.

6 Information literacy and e-learning – in-depth analysis

6.1 Aims and objectives

The aims and objectives of WP3 (data mining for user behaviour) were to provide a more in-depth analysis of data collected over the previous three Cycles. There was a considerable amount of rich data obtained from staff and student interviews which had not been explored in depth. Fuller analysis would identify more fully the lifestyle factors which affect student use of EIS. In view of the increasing number of HE students working part-time while undertaking their degree, plus the large numbers of FE students pursuing courses on a part-time or day release basis, the use of EIS, and support for use of EIS, should be seen within that wider context.

The intention was to undertake this work jointly with the JUBILEE team. JUSTEIS was to focus largely on the student perspective, JUBILEE on academic staff and the information professionals.

6.2 Methods

The methods included:

- further coding of the Cycle One to Three interviews, to break down into smaller concepts which were then compared, grouped and re-grouped to identify different themes
- exploration, and testing of those themes in Cycle Four site data
- development of a framework of influences and constraints which will help institutions plan EIS provision and support more carefully to match the needs of their student body.

Coding focused on:

- patterns of Internet use by students
- factors affecting students' choices of electronic information services
- attitudes towards training, induction and staff in Information services
- the support provided by academic staff.

Consultations with the JUSTEIS research team in March 2003 indicated the following as possible issues for further investigation (JUSTEIS Highlights Appendix 1.7):

- use of VLEs – the problem that VLEs may be used as a 'resource dump', with little encouragement provided to students to look beyond the resources spoonfed to them in this way, and little encouragement to critically evaluate resources for themselves.
- Key Skills – just how do information skills fit into Key Skills and how do students view skills that come under 'information literacy'?
- Internet resources for FE – increasingly the resources may be available only on the Internet but there may be a need for better gateways for such courses
- collaboration between academic and LIS staff to provide resources that meet the needs of a diverse student body, and to support students in development of information skills

The NUD*IST 4 (and later version, NUD*IST 6) qualitative data analysis software was used for the coding work (this software is used for all the analysis of the interview data).

6.3 Current related research and initiatives

Several reports provide useful background to the in-depth analysis. These include related work for JCALT, i.e.

- the Big Blue project⁹ through JCALT
- pedagogical evaluation of VLEs¹⁰
- MLEs and VLEs across FE and HE, MLEs and organisational change¹¹
- INFORMS: Information Skills Project (current project, building on the INHALE project)
- VTSX4L: teaching Internet information skills¹²
- information skills of academic staff (tRISSt)¹³
- CITSCAPES¹⁴, on C&IT induction provision in UK HEIs and FE colleges.

and, to put the use of electronic information services into the context of the wider teaching-learning environment, current ESRC Teaching and Learning Research Programme projects

- Enhancing teaching-learning environments in undergraduate courses^{15 16}, the ETL project led by the University of Edinburgh
- Problem-based learning¹⁷

Other international research also contributed to the in-depth analysis, e.g.

- disciplinary differences¹⁸ on information seeking
- the relationship between the academic and the everyday information seeking for mature students¹⁹

A relevant national project underway is investigating how information literacy may be interpreted by academics.²⁰

6.3.1 Enhancing teaching-learning environments (ETL project)

The five, or possibly six factors identified by the ETL team as influencing student perceptions of the teaching-learning environment are:

- aims, organisation and alignment
- encouraging learning, with an emphasis on ways of thinking and practising in the subject
- assessment, assignments and feedback

⁹ The Big Blue project. Final report. July 2002 Available from <http://www.leeds.ac.uk/bigblue/> (accessed 7 July 2003)

¹⁰ Britain, Sandy and Liber, Oleg. A framework for pedagogical evaluation of virtual learning environments. JTAP programme. c.2000.

¹¹ Boys, Jos. Managed Learning Environments, joined up systems and the problems of organisational change. JISC report, March 2002

¹² <http://www.vts.rdn.ac.uk/x4l/> (accessed 7 July 2003)

¹³ Recognition of ICT skills in staff, <http://www.mmu.ac.uk/ioe/trisst/>, also JCALT programme Staff Information Skills Set (SISS) http://www.jisc.ac.uk/index.cfm?name=project_siss

¹⁴ <http://www.citscapes.ac.uk/citscapes/products/reports.html>

¹⁵ Entwistle, Noel, McCune, Velda and Hounsell, Jenny. Approaches to studying and perceptions of university teaching-learning environments. Occasional report 1, September 2002. Available from <http://www.ed.ac.uk> (accessed 3 July 2003)

¹⁶ Entwistle, Noel. Concepts and conceptual frameworks underpinning the ETL project. Occasional report 3, March 2003. Available from <http://www.ed.ac.uk> (accessed 3 July 2003)

¹⁷ Teaching and Learning Research Programme. The effectiveness of problem-based learning in promoting evidence-base practice. TLRP programme. Available from <http://www.tlrp.org/proj/Higher.html>

¹⁸ Whitmire, Ethelene. Disciplinary differences and undergraduates' information-seeking behavior. Journal of the American Society for Information Science and Technology 53(8) (2002): 631-638.

¹⁹ Given, Lisa M. The academic and the everyday: investigating the overlap undergraduates' information-seeking behaviors. Library and Information Science Research 24 (1) (2002): 17-29.

²⁰ Webber, S. UK academics' conceptions of, and pedagogy for, information literacy. <http://dis.shef.ac.uk/literacy/project/about.html> (accessed 30 January 2003)

- supportive climate (with staff support separable from peer support and more influential on perceived progress)
- evoking interest and showing relevance.

The first factor (organisation and structure) relates to aspects such as provision of handouts, examples and illustrations, but, interestingly, the questionnaire item on provision of web pages provided by staff did not have any sizeable loading in the factor analysis. Encouragement of deep learning (strategic learning for understanding) , rather than surface level learning (learning for achieving) is associated with doing set work which helps students to think about how evidence is used in the subject, feedback which helps to clarify things that were not fully understood.

6.3.2 BigBlue project

The SCONUL information skills taxonomy, as set out in the BigBlue report envisages a progression of skills:

- recognise a need for information
- distinguish ways in which the information 'gap' may be addressed
- construct strategies for locating information
- locate and access information
- compare and evaluate information obtained from different sources
- organise, apply and communicate information to others in ways appropriate to the situation
- synthesise and build upon existing information, contributing to the creation of new knowledge.

Undergraduates are expected to be able to use the first four skills in their first year and then progress. Most of the information skills frameworks are similar, and the BigBlue report concludes in its model that the information literate person:

- recognises an information need
- addresses the information need
- retrieves the information needed
- evaluates information critically
- adapts information
- organises information
- communicates information
- reviews the process

6.3.3 Key Skills

QCA key skills are:

- communication
- application of number
- information technology
- working with others
- improving own learning and performance
- problem solving

The QCA key skills are specified at five broad levels - from level 1 (below GCSE) to level 5 (junior middle management / post degree). Level 4 corresponds most closely to undergraduate level work, but student competencies in key skills may not necessarily match their competencies as defined by A level or other subject-specific qualifications.²¹

KEY SKILLS (IT)²²

²¹ Centre for Developing and Evaluating Lifelong Learning, University of Nottingham, cdell web site

²² Information Technology Policy, specifications and guidance, Key Skills Support Programme

Information Technology is about applying IT skills to suit different purposes. IT specifications are currently available at levels 1, 2, 3 and 4.

Candidates should show they can:

At **level 1** : find and present information, text, images and numbers.

At **level 2** : search and select, and present combined information

At **level 3** : plan, and use different sources to search for and select information, develop and exchange information.

At **level 4** : develop, reflect on, and evaluate their overall strategy

The difficulty (as indicated by the BigBlue project, and observations in JUSTEIS) is that information skills may not be emphasised sufficiently within this framework, as they are crowded out by the IT skills.

6.3.4 CITSCAPES and C&IT induction

The CITSCAPES project examined strategic, tactical and operational aspects of student C&IT induction, in the broadest sense. Response rates for HE were ranged from 29% (for all sections of the questionnaire survey) to 68%, and for FE from 32% to 47%. The HE survey was conducted in 2000/2001. The replies for the operational level are a little difficult to interpret if there are different approaches to C&IT skills provision in an institution, and categorisation is difficult when the same name can mean different things in different institutions (and a different name might mean the same). The categories found were:

- IT induction course/programme (26%)
- part of degree course (32%)
- library and information /academic skills programme (11%)
- subject specific skills course (19%)
- miscellaneous (10%), no answer (2%)

The programme is most likely to be delivered by a combination of methods (face to face, online self-directed, paper-based self-directed) (53%) followed by taught classes (tutor-led) (43%). Mostly, students do this in their first year of study. ECDL was the emerging level of competence. The programme was compulsory only in 63% of institutions. The basic syllabus covered (among other things):

- computer aided learning in 26% of cases
- evaluation of online information in 43% of cases
- introduction to bibliographical databases in 47% of cases
- OPAC search techniques in 60% of cases
- copyright, intellectual property, data protection and legal issues in 33% of cases
- potential use and misuse of C&IT in 35% of cases

Much of the materials are developed in-house. For FE, 87% are developed in house and 71% are produced in-house. For HE, 67% are produced or developed in-house. Much of the development involves customisation, with 65% of the materials in FE being commercially available (e.g. ECDL).

A later survey (2002) of FE colleges (response rate 37% overall) found that a variety of staff roles were expected to be responsible for ICT/ILT implementation (including senior managers, head of IT, head of information services, service managers, ILT champions), with staff time to develop or adapt schemes of work to incorporate ILT approaches the major issue, followed by funding, then access to online and offline content and resources. Most colleges perceived that they were at the transforming stage with IT (not yet embedded, but more than localised development). Similarly college respondents thought students were at the 'transforming' stage in ICT/ILT literacy. Excluding students taking IT/computing courses, the ICT/ILT skills/tasks taught to students include:

- evaluation of online information (rated at middling to upper importance)
- OPAC search techniques (rated at middling importance)
- use of bibliographic databases (rated at low to middling importance)
- effective use of VLE features (rated at low to middling importance)

Respondents were asked if they had evidence that IT core/Key Skills improved student performance, and 53% claimed they had, rating the improvement as 'moderate' mostly. Delivery of such training is mostly classroom based (91% for full-time and 76% for part-time students), with the flexible learning environment (drop in or online facilities more important for part-time students (85%) than for full-time (79%), similarly for community learning centres (64% for part-time, 17% for full-time).

6.3.5 Information skills of staff

Staff developers in HE and FE were surveyed about the importance of various ILT/ICT skills for all types of staff in HE and FE. Of interest to JUSTEIS was the following:

- relatively low priority given to database and spreadsheet skills for senior managers in HE, compared to FE
- teaching staff should be able to word process, but there was less consensus on the need for more advanced skills in using graphics, spreadsheets and databases
- only 86% thought lecturing staff in FE should be required to navigate the WWW and extract and save material, only 79% thought using bookmarks or favourites was required, although 93% thought they should be able to use search engine.
- for learning support staff, learning technology staff the expected standards of competence in HE and FE diverged, with lower standards of skills expected in FE.
- for library staff, the expectations from staff developers for advanced skills were lower for FE than for HE, but even so, the perceived requirements for database skills are lower than in reality they are.

6.4 Discussions with stakeholders

Workshops at the JISC Monitoring and Evaluation Framework Dissemination Day on 10 June 2003 provided the following **key messages** which related to the JUSTEIS work.

For **joint working** between library and information service staff and teaching staff to be sustained successfully, the institutional learning and teaching strategy, or e-learning strategy, should promote organisational structures that make such liaison an expectation. At present VLE development sometimes excludes LIS staff.

Induction to library and information services should be tailored to the needs of different student groups. The main factors to consider are age of entry (school leaver or mature student), amount of placement during the course (for nursing students and teacher trainees), language (for international students) and whether students are part-time and/or distance learners. Each factor affects the preferred content and format of library induction.

The **Key Skills** framework, together with well-chosen project work, can develop the research and evaluation information skills required by students. In other situations, the information skills, that are distinct from IT skills and communication skills, may not be emphasised enough. The Key Skills framework might help diagnose the needs of students at the school/HE or FE/HE interface, but there are some uncertainties at present.

Critical appraisal and evaluation skills are subject-dependent, as different disciplines differ in the criteria they use for assessing the value of particular documents or web sites. Librarians therefore need to work closely with teaching staff to ensure that they are both 'on message' when teaching students. Teaching staff need to make more use of some general and subject specific resources (Virtual Training Suites, Internet Detective) and ensure that library staff know what teaching staff expect of students.

For **FE institutions**, all library and information service staff need to be **multi-skilled**. The present staff hierarchies (professional versus para-professional), part-time versus full-time expectations of roles and responsibilities, often prevent staff developing new skills, or feeling they are being rewarded financially for those new skills. To meet the needs of part-time staff, training events, such as those organised through RSCs need to be held as locally as possible.

6.5 Developing questions for the in-depth analysis

Questions that affect the 'awareness, liaison and training' remit of JCALT and which emerge, even if rather fuzzily, from synthesising the indications of Cycle Four JUSTEIS (Section 6.2), current research (Section 6.3) with the above workshop conclusions (Section 6.4) are:

- What does influence students in their choice of information services when seeking information? How do teaching staff affect the choice? (Section 6.6)
- Do students progress in their information skills, as some frameworks indicate they should, towards critical use of a variety of resources? How are students using specialist services such as electronic journals, for example? (Section 6.7)
- How do Key Skills frameworks improve information skills (Section 6.7.2 to 6.7.3)
- Are students encouraged to reflect on their information skills competence? (Section 6.7.4)
- What do students think about induction and training for use of Library and Information Services? Do some institutions, or subject areas, tend to provide better support? What lessons can be learned? (Section 6.8)
- How could VLEs develop more effectively? (Section 6.9)

6.6 Staff influences on students' choice of information services

6.6.1 FE staff influences

KEY QUESTION

How should FE staff help students to improve their information skills?

As reports for previous cycles of JUSTEIS have indicated, teaching staff influence students' use of resources both directly and indirectly. Some of the advice and pointers provided can assist students in improving their information skills, in distinguishing ways in which their information needs can be addressed, for example (SCONUL taxonomy). Interviews with students indicated how they interpreted pointers from the staff.

Most students 'just know about' the Internet and prior experience is the main factor influencing their choice of resource. For some FE students (around 8% of those interviewed) there was a memorable link between advice from a tutor and their search, and sometimes it was clear that students were being encouraged to 'distinguish ways in which their information need could be addressed' (SCONUL taxonomy):

'He told us to use whatever we wanted but I figured the Internet would be the best option because it's easy to use' [81108, text units 9-30]

'[Interviewer: Why did you choose Google and Yahoo and Infotrac?...]...Because my tutor gave us lots of Web sites' [98105, text unit 18-9]

'My decision and it's on the brief anyway...They [tutors] give you sort of ideas where you can get the research from. Just ideas where you can go' [93102, from text units 36-41]

Sometimes advice was not always followed:

'No, I would definitely use the Internet because I knew like it was there and I probably wouldn't have bothered looking at any other search engines...But I wasn't really very confident going to the library or anything because [name] did say they had some back catalogues of the newspaper which I probably could have looked through but it was like sifting all through it and I didn't know where to find it in the library so I didn't bother' [80102, from text units 29-36]

In the interviews with FE students, library staff rarely provided recommendations for FE students which would help them decide which resource would be good to use for a particular purpose. Most of the contact FE students had with library staff was assistance in finding where a book was shelved, and around 15% of FE students interviewed found this the easiest option if they were unsure on the shelf location:

'I just ask the people who are there and they tell me where to find it' [75108, text unit 76]

For students this is the fastest option around the OPAC, but it is also one which avoids having to learn how to use the OPAC, and some students are only just aware of how the OPAC works.

'No I just go straight and ask them and they look the book up on the computer and tell me where it is...Yeah I think you can do it yourself, but I wouldn't know how and by the time I've looked it up, I could have gone to ask and got it' [75102, from text units 203-208]

'I think at one stage last year they told us we could use the OPAC but I never use it. You know sometimes like if you're scared of using those things.' [75104, from text units 126-128]

'I think there's a computer that's open, I don't really use the library, I'd rather use the Internet more, but I think that there's a computer that's open you know, you can type in titles of books and stuff you know and have a look' [88111, text units 123-126]

This is largely an issue in small FE college libraries, but it may not be unique to FE, as this HE student acknowledged:

'I look forlorn at the desk and get somebody else to help' [96102, text unit 195]

RECOMMENDATION

FE lecturers should continue to encourage students to think of different routes to finding the information they require.

LIS staff need to ensure that students can retrieve and select the information they need from an OPAC, as students will need those skills if they progress to higher education.

6.6.2 HE staff influences

KEY QUESTIONS

When, and how should academic staff provide advice?

In particular, is the dissertation or final year project too late for academic staff to be giving specific advice to students, or showing them how to find and appraise information?

This section considers academic staff only, as advice from library staff is considered in the section on library induction and training (Section 6.8).

Undergraduates generally have less class contact time with academic staff than FE students have with their teaching staff. Unsurprisingly, the few pointers from staff were often associated with final year dissertation or project work, when such contact might be more frequent and on a personal basis:

'I did email the lecturer and she gave me sort of ideas' [100101, text unit 54]

'I've been to see [name]...I mean she gave me like how to start my dissertation so it's just basically getting as much material as I can at the moment...I've been using all the services quite a lot. She told me to use the inter-library loan. Never really done that before so I've started doing that now' [82113, from text units 72-79]

'[Interviewer: Did you know about Emerald before your tutor prompted you to use it?]...I'd heard of it but I hadn't really used it.' [104104 text units 40-42]

Some disciplines are more likely to foster more of a dialogue between staff and student, and the clinical and biomedical sciences, with their emphasis on problem-based learning provide some examples:

From a first year nursing student:

'Well, she [lecturer] thinks we're panicking more than we need to be! She feels we're pushing ourselves too hard and that what we've found will be all right. All secondary but she says we can use that as long as we mention the difference between primary and secondary in our essay and presentation.' [74101, from text units 98-102]

From a medical student:

'We have things called CBLs, case based learning where you have to search on a particular topic and things like that.' [99105, text units 109-111]

From a veterinary sciences student, describing a 'directed learning' session:

'What you get is, you get at the beginning you get just like a problem um on a sheet of paper or whatever, well there are lecturers there, to ask for help whatever' [96101, text units 40-42]

Early pointers in the first year may make the expectations academic staff have of students quite explicit.

From a biological sciences student:

'When you've been there for three years you have to use your own initiative when it comes to trying to find stuff and it can't all just come from papers, so in the first year we did an exercise with our tutor, we had to try and find out about something we didn't know anything about, I can't remember what it was now it was so long ago, but we had to go to all the different search engines and he made us to all of them, like Ask Jeeves, Altavista at that time was the best one, but now everyone uses Google.' [87103, text units 55-62]

In other cases the advice may be less specific:

'Well, we were given the transcript of what was needed which was pretty much a general overview...and we had to get all the information using our own research so I used Google and Yahoo, but we're prompted to use different Web sites to help us and that was useful.' [104103, from text units 38-42]

'I used the journals because we get told quite a lot that you know the third year level we should be using journals rather than books because it's more recent. And you're getting a direct research instead of someone's interpretation of it. So

they [lecturers] strongly recommend that we use journals' [82111, text units 37-41]

'When we first came and when we first, we've done two assignments now, we were sort of pointed in the direction of using MEDLINE and CINAHL to try and find some journals. But it's all been very hit and miss and sort of groping in the dark really. Trying to get to terms with it. Certainly very difficult in the first assignment' [97110, text units 75-79]

More specific advice from reading lists, backed up by lecture recommendations may influence some students.

'The tutors are good as they actually give you lots of Web sites. I have got a Unit called [name of topic] and there is not a lot of literature around for that, so they will always give you in the lectures a Web site – go to [name] and that will give you the latest information.' [74108, from text units 36-41]

Students may look for confirmation of the usefulness of specific resources, and whether use might be a specific expectation. They bring their own judgement into the selection as well.

'I've used that site [Open.gov] a lot and it is on a lot of reading lists for assignments.' [104116, text units 63-64]

'It [MEDLINE] was a recommended one. We did a couple of classes and when I used it I thought it was quite straightforward to use.' [83110, text units 17-18]

'Google's always the first one I use...[Interviewer: ...and then you went to Dogpile and then]...That [Dogpile] was actually through a lecturer [name] he said it was quite good.' [85115, from text units 72-84]

In contrast to the FE sector, HE library staff pointers can be from printed resource guides as well as from personal help. Occasionally it can be a joint effort, as this example indicated:

'I asked them [library staff] the information that I would need. Where would be the best place to find it and they went out of their way to help me. They also tried on the Web site. They did one, I did one and we couldn't find it, so that was the next place.' [104112, text units 69-72]

'I've had to about the NASA documents because they've [library have] got a printed out sheet I've found as well for actually getting the technical reports from NASA.' [97106, text units 53-55]

This physiology student was aware that some advice on searching strategies was available:

'I haven't [asked anybody for help] but I probably will actually cos there's a lady in the library who is very good at searching out stuff on the computers. Like she knows what terms to put in and which ones to leave out to find what you want' [71110, text units 48-51]

RECOMMENDATIONS As 'ways of thinking and practising in the subject, WTPs',²³ vary, not every discipline might be expected to follow the 'critical appraisal' route used in the clinical and biological sciences – BUT the first year might be a good time to start laying some foundations.

²³ Entwistle, Noel. Concepts and frameworks underpinning the ETL project. Occasional report 3, March 2003. Available from <http://www.ed.ac.uk/etl>

Academic staff need to help students to evaluate information and to make that an expectation.

6.7 Progression in information skills: the student perspective

6.7.1 Progression in information skills among undergraduates

The BigBlue report (Section 6.3.2) envisages that information literate students should be able to:

- recognise an information need
- address the information need
- retrieve the information needed

As students progress through their degree programme they should, presumably, be developing skills in selecting and using resources appropriate to their information needs. It might be expected that students should be able to explain their rationale for the search for coursework (Section 6.7.1.1). What is of some concern, perhaps, for matching the research findings to the theoretical frameworks proposed of the 'information literate' person is that students do not necessarily articulate such information skills when talking to interviewers about searching for information for their assignments. There is some discernible progress in information skills, but students are not always able to reflect on such skills. (Section 6.7.1.2)

KEY QUESTIONS

Do students opt to use more specialised services (e.g. the services provided through JISC) as they progress? If not, why not?

How can students be persuaded to use such services?

6.7.1.1 Rationale for selecting information resources

The critical incident search described at interview is frequently part of ongoing work for an assignment or other set work, and students' reasons for choosing the sources they did, may provide some insight into their strategies for selecting information. First year undergraduates used search engines and books (search engines used five times as frequently as books) for the critical incident search. Of the searches done for an assignment, search engines were used in 67% of the searches, but databases and specialised services were in fact used in 20% of the searches. All but one of the first year students describing the use of such specialised services were clinical or biological sciences students. Their descriptions of the searches suggest that they are still learning how to use these resources.

'I actually went into using Ingenta. About four dozen versions of the Journal of Advanced Nursing or the Journal of Clinical Nursing. With those I tend to go through the whole of the contents pages because...that...I never know when I might spot something else.' [74102, text units 30-34]

'I ordered my password for Athens account and then I went in through the Athens Web site thing and I searched through the item. I first of all put [name of topic] and there was loads that came up so I thought OK, I've got to minimise my search so I used a more specific word and then I went to another site that's nothing to do with the university, Northernlights.com.' [82116, text units 18-23]

'I think it's just on the library ones. If you click on there, gives you a list of all the databases available and then you choose a database and they usually ask for a user name and password that's separate from your network, underneath your username and then within there the search was for [name of topic] and it didn't work.' [97104, text units 32-36]

'I'm not sure who they are exactly, I think they, they just basically, they, they're like an information centre so you can find out various things about whatever topic related to medicine. I don't think they're a drug company as such, more like a, a library.' [99105, text units 28-32]

When discussing possible alternative resources they might have chosen, first year undergraduates indicate that their reasons for choosing the route they did are concerned with factors of time, convenience of format, and an unwillingness to try the unfamiliar, unless forced to do that as part of assignment instructions.

'Well because I got enough there I didn't bother looking anywhere else. I was pretty tight for time as well so....' [94114, text units 71-72]

'You can obviously use the library resources or journals or whatnot but because what you can read is stored on the Internet anyway you can kill two birds with one stone.' [82101, text units 31-34]

'I had to do the essay and I couldn't like, you know, I had no scanner so I couldn't get the picture out of the book so I had to get the picture off the Internet.' [94116, text units 61-64]

'Well using textbooks and things. I still had to do that because it's required as part of the project.' [94115, text units 63-64]

Some FE students noted the difference between higher education and the BTEC course requirements.

'We're expected, basically most of our modules, not so much when I did the BTEC, but with this one you have to do a hell of a lot of research. I suppose it's the same as any higher education course...We had a lesson and discuss there what aspects we could do and we'll come up with an idea and basically that helps us with the route to follow...when I do research it's just natural now.' [76104, from text units 86-95]

Undergraduates in their second, third or fourth year mentioned some other quality criteria such as currency of information, the reliability of the source, and the authority of the source.

'Well I could probably use the Internet to ask companies about what trials they use but for clinical trials and journals, so that it's not one sided, it's better to use MEDLINE.' [83104, text units 22-24]

'There are, but they're hard to find. You've got journals and things like that in the library as well, Um, but you know the online information is easy to find, a lot quicker as well, and probably more recent as well.' [97115, text units 59-62]

For them too, time saving is important.

'I went on the Internet FT.com, brought up all the latest articles they had and it was so much easier to print them off. It just saves the hassle of going to the library...and they are such heavy, massive boxes...you can print them [articles] off, enlarge them print just the sections off you want.' [74108, from text units 16-21]

6.7.1.2 Gaining familiarity with specialised information resources

How they find their way through the maze is a little unclear at times, and learning about specialised sources takes time.

'If I hadn't known about the Athens thing I would have just gone on. I think the thing is I wouldn't have been able to search, the good thing about that is you can actually type in like key words and find it. I mean my essays have been, I don't

know how I discovered that I could use that, but my essays have sort of been better and I've got more data.' [100101, text units 69-74]

'I can't think of the names of them. FT Web site all the newspaper Web sites have been quite useful whilst I've been researching. I am not that good with the University's databases, I have starting using them more this year, but there is so much information on the Internet that you just get lost in it.' [74107, text units 42-46]

'Well, the BNI [British Nursing Index] the university recommends anyway. The others [Cochrane, CINAHL] I came across by chance. Literally by chance, searching on the Internet....So I've wrote down their address now so that I can get straight into them.' [74101, from text units 42-53]

'Because, probably, I don't know whether it's out of laziness or making a rod for my own back, I've found the Ingenta way of doing it although I have to go through the contents pages of so many at a time...With those if I need them I'm pretty much guaranteed to get the full journal article rather than just an abstract or something. With the others you don't necessarily get the full article and I find some of the search engines [referring to specialist databases] a little bit difficult to use.' [74102, from text units 67-75]

Some students are able to rationalise their choice depending on the type of search (broad/specific) and the timescale they have allotted.

'I could have used Yahoo, I could have gone to a specific site like BBC or FT, but it was very broad and I thought I'd start with Google and there's no advertising. It's very straight to the point and it's really fast and it brings quite a lot of articles.' [104106, text units 36-39]

The search engine mode of searching affects how students in later years view the more specialised resources.

'Could have used other search engines such as BIOSIS or...The advantage of OVID it's relatively straightforward to use and it's got so many search engines involved. Perhaps the disadvantage is that it doesn't have direct links to the journals but perhaps that's better because it'd generally cheaper to photocopy than to print out.' [71111, text units 64-69]

For others, use of particular specialised resources becomes routine.

'...which is slightly different to the normal method I use, which is becoming like clockwork and efficient, going in, calling up the Internet, calling up the database searches, going to the BNI, opening the database I want, and then using my keyword search and then printing out the searches.' [74114 text units 17-22]

Saving, printing and downloading options can sometimes be obscure. Students appreciate being able to manipulate the information.

'Printed some, kept some because I didn't know you could save at the time. Since I've been told you can actually save it, but I didn't know that then.' [97104, text units 66-67]

'I went through them and sort of pruned out ones I thought sounded good and those that were too old or I knew we wouldn't have the journals and then I printed the list out and brought it in.' [97113, text units 73-76]

RECOMMENDATIONS

Students need to be persuaded of the benefits of investment in time required to learn to use these services.

Direct and specific assignment requirements provide an incentive to use such services.

Students may also be persuaded to use such services if the information is demonstrably more reliable, more authoritative, current – and that using these services saves the students time. The time savings are likely to be apparent if students are well acquainted with the mechanics of the various saving, downloading and printing options.

6.7.2 Progression in information skills among FE students: Key Skills

For FE students, progression in information skills has to be assessed against the Key Skills framework. Of interest were students' views of their information skills and the Key Skills support (Section 6.7.2.1) and whether the Key Skills framework was providing students with the skills they might need if they were to progress to higher education. Government policies stress the need for a seamless interface – is this being achieved as far as information skills are concerned? (Section 6.7.2.2)

KEY QUESTIONS

How do FE students perceive information skills as Key Skills?

The Key Skills framework is apparently effective for many students, but is there a significant gap between Key Skills 2 and the skills that might be expected of higher education students for evaluating the information they retrieve?

6.7.2.1 FE student experience of Key Skills

The FE students interviewed were more likely than the undergraduates to stress to the interviewers that they were not just 'copying and pasting' but trying to put what they had found into their own words for their assignment work, reflecting, perhaps the Key Skills of searching, selecting and presenting combined information.

'I had to copy it, I highlighted and copied it and took it into Word, pasted it because it wouldn't print out the one section of it. So then I printed it up in Word...I just highlighted the bits that I wanted to use and I put them in my own words for the assignment.' [92105, from text units 28-34]

'I printed it out and then you have to highlight what you find interesting and stuff...I included it in my project and you have to write where you got it from, what sites you used.' [93101, from text units 63-67]

'I printed it off and then I wrote it up and condensed it into notes and things, notecards. [Interviewer:...did you cut and paste at all?]'...No. I don't know how to do that, it's hard.' [93116, from text units 77-81]

'I wanted a colour copier [print], so I saved it and went onto another computer.' [98107, text unit 77]

'Instead of using it in its pure form, we dilute it down and use it, interpret it in our own way.' [93108, text units 67-68]

Perceptions of the Key Skills experience were mixed, but largely very positive, particularly for students who have missed out, for some reason at school.

'When I was in secondary school I sort of missed out on, IT wasn't compulsory...But since I came to college I've been having my Key Skills lessons. Everybody's moaning about them, they don't like them but I like them cos I get to learn new stuff. To everybody else it's old, but to me it's new and I really like it.' [93116, from text units 161-170]

'We've got Key Skills thingy but I'm not really enjoying it because I'm, I can do Word, spreadsheets...I've noticed that my typing's getting faster but I'm not enjoying it. I want to know how to do Web pages and things like that.' [93117, from text units 156-160]

'Every Monday we have our Key Skills lessons in IT so I've learned quite a lot from that anyway. I've got a computer at home...when it comes to doing homework and typing up I can type it a bit quicker than what I was able. And then if we need to know anything our teacher in the lesson always tells us anyway.' [93120, from text units 255-260]

'Before I came here I didn't know how to use databases and spreadsheets properly so I'm learning how to do that with Key Skills and that's really useful with my coursework and doing mathematics IT.' [75116, text units 60-63]

Some students had had some IT training, but the Key Skills framework came in after they had started.

'Not on this particular module, but when we do come to college...we do have to have some training on the computers to prove you are competent...I really don't know [asked whether this was Key Skills] I did this four years ago now.' [72101, from text units 130-138]

Others recounted training in cutting and pasting, use of Excel, Access software packages, and were happy with their achievements and the level of support provided.

'And also Publisher, how to create your own letters and I used that to create the front and back covers of a diary I made...I must admit it's excellent teaching and if you don't know something they are willing to help you, there's no doubt about that.' [72105, from text units 133-142]

'Well, we've done a Key Skills module through both years and I've just done my exam which was level 3. I didn't think it was for me but I managed, but now I've got to do the assignments work a portfolio. I've been happy with what we've actually done here although I do struggle in IT.' [81108, text units 168-174]

6.7.2.2 Information evaluation: a missing ingredient?

Key Skills are generic, intended to be standard and that should be their value to employers. For some students, particularly HND students, the framework may not be sufficiently focused on their needs, or there is insufficient space within the timetable to formally integrate such skills.

'It wasn't terribly focused, like we needed stuff on Powerpoint which would have been useful, we didn't get anything on that...if it was tailored more to the fact that we are doing quite a specific course...a lot of it is horticulture related and I think some guidance on some good sites to go to would be useful.' [72103, from text units 1880-185]

'We did start with Key Skills this year...But we had too many hours on our course and apparently we could do some of that in our lessons...But word processing was quite handy...there is...quick routes I've never seen before when I was doing Key Skills.' [76104, from text units 182-191]

The one problem with some Key Skills programmes is that students may not gain sufficient skills in selecting and evaluating the information they retrieve. As one lecturer acknowledged:

'Yeah, and students don't seem to be able to use the internet when they get to us in regards to retrieving information that's relevant. You find that they'll come back and they'll have got information off American sites especially for things like social policy... and then another issue with them is that they get all the information and

then they don't know what to do with it so they just print off any old thing without reading through it and being, and selecting really. Obviously that comes with training.' [88302, text units 124-131]

Opportunities for encouraging development of such skills occur in teaching units which encourage a research perspective.

'Through the classes I encourage them to use the Internet...social policy and other research perspective units. I do some input in the class as much as you can on how to get information.' [80302, text units 134-136]

Students going on to higher education may need a very structured approach, particularly when starting from a low baseline of IT skills.

'Yes, any of them with no computer experience we put them on to Webwise and then after that they do the BBC Becoming Webwise, and then after that they have two induction sessions as well with our support team, and then they have Infotrac, with a two hour familiarisation session on that... Our main aim is that by the time they leave us they can go to (Name) University and be confident when they are given an assignment they've got the skills to go into the information systems.' [98301, from text units 75-86]

Some FE students appear to have little formal support in 'research and evaluation' skills, particularly those working on Key Skills level 2:

'We have Key Skills...she's gone over things like word processing, databases, spreadsheets and charts and things like that...we've had nothing about the Internet, I don't know whether there will be either.' [88101, from text units 102 – 108]

'[Interviewer: So this exercise that you did with Google, are they actually teaching you how to put in search terms?]...They were on that one...other than that they don't really teach us much on the Internet.' [92101, from text units 101-107]

'Well in our IT lessons we have done Excel and spreadsheets and that's about it...but we haven't really sort of had a lesson on, how to use the Internet, it sounds really stupid but would probably be quite helpful for someone like me who's got no idea really...they just sort of said if you want to use the Internet then it's there for you...I sort of picked everything up from friends at college you know, and at home I don't use it.' [92107, from text units 145-156]

Those students who progress to more advanced courses may feel they have to learn by muddling through, with informal support.

'I actually did an IT course before I started, When I first started here three years ago. But that was basically elementary computer skills, finding your way around a keyboard, word processing, spreadsheets and database. But that was only a six month course and then I came on this. More or less I've found my own way around the Internet. As I said, there are people up there, if you do get stuck they will show you.' [76103, from text units 176-182]

Some part-time students may miss out.

'But it [IT training course] is not compulsory. It's only if you've got time, if you're on a part-time course and you've got half the week free then it's like left entirely up to you.' [80101, from text units 206-209]

RECOMMENDATIONS

Programmes designed for Higher National Diploma students and students entering higher education need to allow for sufficient practice in developing skills in evaluating information retrieved.

From Key Skills (IT) FE students are fully aware of the need to put information they find 'in their own words' – a lesson that might be learned for HE induction programmes to help combat 'copy and paste' plagiarism.

6.7.3 Key Skills in higher education

KEY QUESTION

How should Key Skills for IT and information skills be implemented within higher education?

Not every higher education institution is adopting a 'Key Skills' framework to provide IT, information skills and study skills support to first year undergraduates. Most institutions are, however, gradually developing programme specifications which include some specification of key skills, and are likely to be based on the QCA framework.

Students come into higher education with a very diverse range of skills and experience, and providing a programme that initially appeals to everyone is almost impossible. For mature students unfamiliar with IT, the sheer fear is evident, but it may be a case of 'feel the fear and do it anyway'.

'We've all complained about it [Key Skills module] basically because it was too much on things we didn't think we needed...We can type but we can't, it's very frightening...and I made this comment that even computer whizz kids can be overwhelmed by it. So if they can be overwhelmed by it what about us who are just total novices. You sit there and you stare at it and it's a machine, it's there to help but you are very frightened of it and I don't think we had enough input... Which one have I used? What's it called? I've used it because we had to do an application of numbers. It was on one of the Windows, numerical one that I used to do my graphs and my charts which was really great.' [104112, from text units 189-199, 292-294]

'He went through it that quick...I was sitting by my friend and she knew a lot better so I had to keep saying where did he go and things like that. Because by the time you'd caught up with him he went off on something else.' [104120, from text units 130-134]

As in FE, there may be a need to ensure that students are familiar with the mechanistic aspects of information retrieval, but students who are struggling with the mechanics may find it difficult to recall the purpose of the exercise as well as those who are more familiar with computers.

'When we began the course...we had Key Skills, how to turn the computer on, how to use it, how to use search engines and also we had the librarians. They also gave us a lecture to the whole class on how to use the library and to use the particular OVID which to look for a particular book, to look for a particular article in a periodical...I can't say I remember all of it, but yes they did go and show us. And there was backup to be fair with every student to pick up handouts in the library.' [104117, from text units 108-119]

Key Skills in this case enabled the student to make a change of course fairly painless.

'I started off on a teaching course for IT, Key Stage 2/3 and the course there was exceptionally good for the basics, and we had additional workshops, and so from there I bounced off that, just I didn't want to do that, and it's enabled me to go on to this level course.' [82109, text units 118-122]

A more formative assessment of the unit component by component was appreciated by this student.

'The first one we had...a presentation in Powerpoint, then use Excel to do a graph, then we had to email it to my tutor, the exercise, then just a couple of days ago we had to do another exercise using Excel only, where we had to write energy budgets for animals using all different formulas. We've got a book we've been given as well....It's not a proper exam it's like an assessment.' [87105 from text units 130-140]

But for others, such training is too low level, and the relevance not obvious.

'No in the foundation course we had, I don't know what you call it, IT training and that was just primary school, that was really not much use.' [85115, text units 170-171]

For others, the intranet may be of interest but the Key Skills themselves of less obvious relevance.

'They've taught us how to use the email and Internet and the intranet. Actually the intranet is pretty useful. And they've given us a couple of lectures on it and they're available for questioning...the Key Skills thing [questionnaire] I've done that but I haven't done anything to like improve the knowledge I have you know. I just gave them the baseline and I haven't really bothered to go back and change.' [96108, from text units 128-130, 135-137]

The messages coming through are that the relevance needs to be made clear to students, to convince those who doubt the usefulness of the programme for them, whether from sheer fear of technology or perceived confidence in their competence (whether justified or not). Relating this to other research on implementing Key Skills in higher education, the Key to Key Skills²⁴ programme found that implementation of the web-based approach developed was more satisfactory to students if the model of use was partially or fully integrated into the curriculum. The age group, gender, level of course were not major factors, the model of use was.

In some institutions, and in some disciplines, the Key Skills programme may be titled as professional skills, a name that may convince some students more than 'Key Skills'.

RECOMMENDATION

A Key Skills for IT and information skills programme in HE should relate to appropriate subject content, to ensure students see the relevance of such programmes.

6.7.4 Satisfaction, dissatisfaction, confidence and lack of confidence

From a marketing perspective, information service providers and content providers need to know what makes their product attractive to the consumer. What is it about the product that customers particularly like, is the experience of using the product pleasant, and does the product meet their needs? Interviews with students revealed how their satisfaction with the process of searching for information was affected by whether they obtained the results required (or better) (Section 6.7.4.1), and that a perceived lack of specificity led to some degree of dissatisfaction (Section 6.7.4.2). Some students were able to reflect critically on the process of information searching, whether satisfied or dissatisfied with the actual outcomes. (Section 6.7.4.3) Dissatisfaction was often associated with problems in finding information required to meet coursework requirements (Section 6.7.4.4). Students find it difficult to separate a successful process, showing competence in information seeking from the outcome, which may or may not be successful (Section 6.7.4.5).

KEY QUESTIONS

How can students be encouraged to reflect on their information seeking skills?

²⁴ Drew, Sue. Final report 2 (May 2000) Key to Key Skills project. Available from <http://www.shu.ac.uk/keytokey/index.htm>

How much practice is expected of students in using electronic information services? How are confidence and competence in e-learning intertwined?

6.7.4.1 Gratification in information seeking

Satisfaction in searching may be derived not only from getting the desired results, but also from a feeling that the search experience was good. Unsurprisingly, the highest satisfaction scores are associated also with finding exactly what was required and sometimes something additionally valuable that had not been expected – the serendipity factor.

On Internet searches, added value came principally from finding information that was not known before, or realising that there was more information in total than expected.

'Oh no, it was two hours well spent I think. I do do quite a lot of searching and I did a paper for visual culture...I was particularly interested in 'Blue Pose'...and there was loads of information about that...they had looked into the fractal imagery...so that was really quite in-depth research that I had no idea about.' [103107, from text units 105-115]

'And plus on the Internet it comes up with the qualifications required for the different universities and in the book it doesn't really say what requirement you need.' [75112, text units 21]

'One thing I noticed is that they had a little attachment on the bottom when you went to book it warning that there were not facilities available for children on all these, it's not in the brochure...If I'd gone to the Internet originally I wouldn't have booked it.' [76102, text units 81-84]

'I was quite surprised because I didn't know anything about the topic and well, thought the Internet might give me a few Web sites but came with like hundreds, Well this [miner's strike] is like a very big topic and I didn't know about it...I was happy because I didn't have to go searching books. It was all there for me.' [80104, text units 93-96, 103-104]

6.7.4.2 Lack of specificity in information seeking

Perceived problems in searching were mostly associated with the lack of specificity – not getting quite the information required. Around a fifth of those who gave a mid-way satisfaction score explained some problems associated with specificity.

'It was OK but I couldn't exactly find specifically what I wanted. I had to hunt around for it. I couldn't just go straight on to something where you could find it, you had to go...other things to find it. It got quite tedious, frustrating.' [93119, text units 85-88]

Even using more specialised services such as the quality databases, means rooting around in several services, as the information may be reliable but the coverage may be limited for some multidisciplinary searches, leading to a partly satisfied search score.

'Well the thing with searching on these databases is that if you just limit your search itself to MEDLINE say, you're only seeing a portion of what's out there. So yes I found quite a lot of what's useful but I'm, now I've got to search other ones and specific journals to get some different viewpoints...So I will be searching through American Journal of Clinical Nutrition afterwards.' [71115, from text units 121-128]

6.7.4.3 Reflecting on the information seeking process

Feeling confident in searching helps, and some students who assigned high satisfaction scores to their searches could explain their searching and reflect on the searching process.

For example, on use of specialised legal resources:

'The actual essay was about land registration so that's the obvious start to start searching, keywords, but there is also legislation and there is a land registration bill going through at the moment, that is also relevant to what I wanted, but didn't necessarily come under land registration...I always tend to start off a very wide search and go through the bits and discard the bits I don't want rather than try and guess a narrow term and then miss the detail that you want...obviously we have been shown how to use the various sites, to get the best out of them, but the actual strategy of how, what to put in, that's all formulated over a period of time, you get to think how the person who gets to put the keywords together, how are they thinking. There being a legal side, you have to think legally and not sort of general English, you know what I mean.' [74110, from text units 69-80, 86-91]

Successful use of the OPAC seems quite an achievement to some students.

'I noted down, what to do you call those numbers, Dewey numbers and then I went to the shelf. I know where that shelf is now, so I won't have to go back to the computer again for that subject...Um well this isn't really a computer problem but it just annoys me when the books aren't on the shelves' [103113, text units 56-58, 68-69]

'Yeah, it's [OPAC] is the quickest way really to access the information...I think it's something like the 001 number followed by two or three digits followed by the first three letters of the author's name, so it just generally points you in the right direction, the aisle...I'd go to the OPAC for a specific book and then once I was actually in that area I would have a scan.' [82103, from text units 45-51, 57-59]

For some students, the search may have produced some of the information required but the process was uncomfortable – the computer may have crashed, there were password problems or the interaction (e.g. email request to an organisation off their Web site) was not successful.

'I have used it before and I've had to use different terminology and it's been quite frustrating...well for accessing it I'd give zero but then I think it's because I don't know what I'm doing so...[Interviewer: What about the information that you found, how pleased were you with what you found?]'...I'd give that a 5.' [103108, from text units 90-92, 99-103]

'Ah right, for my dissertation it is, I'm looking to control irrigation units, using mobile phone technology...so I wanted to use the Internet just to have a, a search round for other companies...You're sort of dealing with email quite a lot then, which compared to letters is very reliable, but it's just a pain to try and get your emails if you're not on the college networks...I think I sort of covered all areas, I kept on finding identical sites...I didn't really get enough of what I wanted...but there's not the products out there that I am looking for...it's not the Internet's fault it's more that the systems aren't available.' [85104, from text units 15-39, 93-100]

'Well I must say I was a little disappointed [over online journal subscription request] I wasn't impressed. But I had heard something about [name] anyway that they weren't the best of companies so, they tend to lose things so.' [71113, text units, 68-71]

6.7.4.4 Dissatisfaction with search results

A few students attributed their lack of success partly to a lack of confidence in their own searching skills. The majority of dissatisfied students had simply not found the information they required. It is difficult to assess from their accounts whether the information might have been there (and was missed) or whether it genuinely was not available. In some cases there was a mismatch between expectations and reality, in expecting that some sites would provide information they did not.

For example, one professional society did not provide information that a similar professional society did have.

'I mean, [name] is obviously is quite proud of its history. As is [name] except that they want to be a now, happening site...it didn't even have a quick timeline.' [71103, from text units 232-239]

Science Direct did not, apparently cover a journal required.

'Journals and when I was on Science Direct just put in search and look for a specific journal. It wasn't there.' [82114, text units 37-38]

The Internet was expected to provide specific information, which was eventually located in a book.

'I was trying to find out about power suppliers...I don't know whether I was looking for the wrong sites or what but I only found basic information on a couple of sites...I went to the library and got a book and that was a lot more useful.' [88118, from text units 15-28, 71-72]

The library's e-journal collections did not cover the research student's disciplinary interests.

'And then I found the list, but they don't have any journals on physics...and then I was trying to find information of how can I get journal from all the libraries, different from this school and I didn't find that information.' [89102, from text units 21-22, 31-34]

Some students do distinguish their feeling of general competence in searching (method good) from the results (outcome not so good).

'I have to say probably about three. Not because of the actual methods of doing it, but because I didn't get as many sources back as I wanted. But the actual process would be about four.' [82111, text units 102-104]

For others, the time they have to spend means that they are less satisfied than they might be.

'I must have spent about four hours...I was able to find a lot of pictures and diagrams and graphs and tables, lots of statistics which was very helpful...Four, not five only on account of spending time on it.' [94117, from text units 110, 133-135, 141]

6.7.4.5 Assessing the processes in e-learning

The JUSTEIS data suggests that students are satisfied with their information seeking if they obtain the results they think they need. They are not satisfied if they don't get the results, even if the process of information seeking was, by all accounts, thorough. Satisfaction is entirely results oriented²⁵, and little credit awarded to the process, the skills they may be practising.

²⁵ Frank Furedi refers to the instrumentalist ethos towards knowledge that is current in HE today, *THES*, 25 July 2003, p.16

As the e-learning consultation document²⁶ indicates (paras 31, 94) learners 'want to be sure that their assessment captures the new skills and capabilities they are acquiring through e-learning to study their subjects in new ways.' If there is no incentive for students to reflect on their searching skills, and that the outcome is measured only on achieving a 'search' – never mind the quality, feel with width – then skills associated with information literacy are not valued by students themselves.

RECOMMENDATION

Students' coursework and assignments should encourage them to reflect on their information searching, instead of seeing information searching just as an invisible means to an end.

6.8 Progression in information skills: induction and training

Views of students on their library and information services induction, training courses and other sources of support confirmed that most institutions have a multi-pronged strategy (as indicated by other surveys, Section 6.3.5). This section is organised to answer questions concerning the content of library and information services support, the format of induction and training (who should do it, and how should it be undertaken). The student perspective on early induction is presented in Section 6.8.1, with views on follow-up training presented in Section 6.8.2. There is no 'one size fits all' solution to induction and training but there are lessons that may be learned across the sector (Section 6.8.3).

6.8.1 Induction and introduction: the student's perspective

Workshop participants at the dissemination day on 10 June 2003 discussed the crossover between 'induction' and 'skills training'. The consensus was that induction should be looked at flexibly and be delivered at point of need rather than to all students at the start of the course. It is a question of ensuring everyone has a minimum threshold of information skills. Undergraduates need to be encouraged to ask for help, as many are intimidated by the library and need to know they can get help. On the other hand, the library and information service also needs to encourage independence. From the student's perspective, are these aims satisfied?

KEY QUESTION

Should aims of induction be minimal – an orientation to services?

The range of views from first year undergraduates:

'We had an hour library induction where they showed where all the books were, they showed us the search catalogue. We weren't shown anything about the Internet but we were given a user name and password and then basically we were told to get on with it. I'm sure they'd help if we needed it.' [103112, text units 107-111]

'Well, we've had our induction but because you're new a lot of it does tend to go over your head...in the induction it sounded so complicated I thought I would do it at home...I have got the facility to do it at home so it doesn't really bother me.' [103107, from text units 155-161]

'We did have a couple of sessions just introducing the library package but we never really went on and practised on the computer ourselves. It was told to us.' [104119, text units 105-107]

'We did have a day before we actually started which helped us sort out like how to use the computer systems and network and how to access different things like

²⁶ Towards a unified e-learning strategy. Consultation document. DfES, July 2003.

library, ordering books over the network which was helpful.' [82106, text units 129-131]

'In the first week they go and, to use the library and show you how to use other things...I think it was the head librarian.' [85111, from text units 84-87]

'We got taught how to use journals and we got taught how the system in the library works because it's quite daunting when you come in and you don't know what's going on, but when you get taught where everything is it's quite simple...it is quite useful to use once you know how.' [87105, from text units 93-98]

'At the very beginning in induction week there was a computer training thing which I went to. I thought we had to go to it, but hardly anyone went out of the year.' [94106, text units 121-123]

'There was a library induction but I didn't go to it...I didn't think I needed it...[Interviewer: How do you know how to use it then?]...My friend showed me.' [94116, from text units 128-135]

The range of views from undergraduates in later years on their introduction:

'At the start of the first year we had a few basic lesson teaching us how to use the OPAC. It was quite useful but already knew how to use this stuff, but if you didn't, it would have been quite useful....If you wanted to arrange any extra help, you had an option to contact somebody in the library.' [104102, from text units 158-161. 180-181]

'When I came, I was shown around the library, we were shown around the computer centre and for our first year module, we were given a task where we had to go around the library, it was quite sad really, it's like something they would give to school kids, you had to go round the library...We use OPAC all the time but I've just generally picked it up.' [104103, from text units 144-153]

'No one's shown me how to use search engines but the people in the library...when they were doing the induction they were showing us how to use the library system.' [82105, text units 161-163]

'The problem with it the first week we had we had that then we left it alone for months before we actually used...So maybe a revision thing on accessing journals specifically would have been really beneficial.' [97114, from text units 234-236]

The dissemination workshop participants noted the needs of particular groups of students such as:

- students with work placements (need information on services available in the host organisation, special services available from the HEI during the placement)
- international students (need email access immediately, materials in their own language, possibly special keyboards, as well as advice on some cultural issues (e.g. surname, forename positioning in catalogues).
- part-timers (need to be given information about access and need information about reciprocal arrangements with other libraries and off-campus access to resources)
- distance-learners (practice varies considerably, may have to manage with a 'written induction')
- disabled students (may need additional one to one induction)

RECOMMENDATIONS

Orientation at the beginning of the programme should be tailored to specific needs at the time – nothing more, nothing less.

Students need advice on home access to EIS (as this allows the mature or the less confident students to practise at their own speed).

6.8.2 Follow-on training and support: the undergraduate perspective

The picture painted of induction in the previous section is rather different to the picture presented by the survey of HE providers in CITSCAPES (Section 6. 3.4). Undoubtedly programmes are being offered, but they are not compulsory (as also noted by CITSCAPES), and those students who might need proper induction might be among those who are missing out or opting out.

Even if the basic syllabus, as indicated by CITSCAPES covers (among other things):

- computer aided learning in 26% of cases
- evaluation of online information in 43% of cases
- introduction to bibliographical databases in 47% of cases
- OPAC search techniques in 60% of cases
- copyright, intellectual property, data protection and legal issues in 33% of cases
- potential use and misuse of C&IT in 35% of cases

then it seems that induction and training programmes are not covering all the areas that might need to be covered.

More importantly, it seems a high proportion some students are missing out on evaluation of online information at an early stage in their undergraduate degree. Examining the percentage coverage of topics (above), students might not be making the connections between copyright, intellectual property, and their own evaluation and use of information from the Internet. No wonder there is a plagiarism problem?

KEY QUESTION

What methods for information skills training are effective?

Practice in information skills support varies considerably and methods employed by library and information services include:

- special sessions for use of particular software packages (e.g. Powerpoint, Excel)
- leaflets
- sessions which link to particular course requirements (e.g. citation practice, use of specialised databases and other services)

A graduated approach is used in some institutions.

'In each year at the beginning of your year they give you like a specific computer course. Like when you're first year it's basically how to use like just the library OPACs...but by the third year at the start of term they give you like a three hour course which is making you physically sit down and see how easy it is, say to use ATHENS or like one of the science search engines.' [71110, from text units 127-133]

'They were expanding on the first year because in the first year it was more a general thing, in the second year you need to focus more on the electronic journals...in the seminar groups they'd focus on maybe a specific paper that would be useful and then you'd kind of expand out on how to find other papers.' [82115, from text units 211-222]

The timing of these is important, to ensure they are at the 'point of need'.

'We've done a few courses here but they tend to go over the same things and not include other things that you need. I mean in the third year now we only just, about a month ago...did the actual course on how to use search engines and the

journal searches, which is completely ridiculous when we've had to do projects since the first year. It's not been helpful.' [87106, from text units 109-114]

In other institutions students have to use the resources for an assessed module. A third year student remembered this:

'They did a module, all the social sciences were together and they gave, they made use do like, like a handbook but it was full of activities really that involved using resources that we have in the library. That took a while to do...Yeah, basically all the stuff we had to do in that, like we'd never done before so that was like using like World Magazine and Bookbank and stuff like that...and we had to look on CD-ROMs, look in the newspapers and stuff like that...Yeah, it was good like. There was a lot of things I'd never really noticed before unless I had to do it...Made us all aware what was available to us.' [82113, from text units 172-190]

Other students were aware of the variety of support available, although they preferred to 'learn by doing' themselves.

'Also you have to book in for the induction session and they just basically go through everything roughly, but they have lots of courses if you want to, so somebody who didn't know what they were doing could quite easily go and sign up for a quick five minute tutorial to be shown that, but I prefer to find out myself really.' [86115, text units 144-148]

Other sections (Sections 6.6.2, 6.7.1.2) illustrate how academic staff influence the attitudes students have towards information skills and information appraisal. Academic staff differ in their approach (see Section 6.9.3) and this requires a very flexible approach from library and information services staff in providing training and support. Integration into the curriculum seems to occur most in the clinical and biomedical sciences (Section 6.6.2.1).

RECOMMENDATION

Training needs to be provided close to the point of need – graduated approaches are often successful.

While integration in the curriculum works well for many disciplines, other types of training support such as one-to-one help, leaflets, and special courses, as these are appreciated by students and used.

6.8.3 Learning from different organisational models for training support

Previous JUSTEIS reports have concluded that a team approach among academic staff towards integration of information skills in the curriculum is more likely to be found among some types of institution, but that there was a strong disciplinary effect as well. Looking at this from the top-down perspective, CITSCAPES suggested that a strategic approach to C&IT induction and training is linked to systematic provision of induction and training, but CITSCAPES did not examine disciplinary differences.

KEY QUESTIONS

What lessons can be learnt across the sector – given the differences in organisational models for training support?

Three models of ILT support found among HE staff are, according to JUSTEIS (Figure 6.1):

1. Follow my leader (*Sole IT enthusiast, other colleagues of a wide range of ability*)
2. Free market – laissez faire (*Staff aware, little evidence of central direction*)
3. Collective – team push (*Strategic integration of information skills into the curriculum*)

While Model 3 may appear the ideal from the teaching and learning perspective, departments with a strong research focus may be Model 2 as that is partly what makes them successful in research. Institutional strategies for ILT support need to take account

of these differences, as well as the requirements of departments with specific professional and vocational requirements (e.g. law). Departments where problem-based learning or evidence-based practice are pre-eminent requirements are likely to value information resources and take-up of resources will be different from other departments

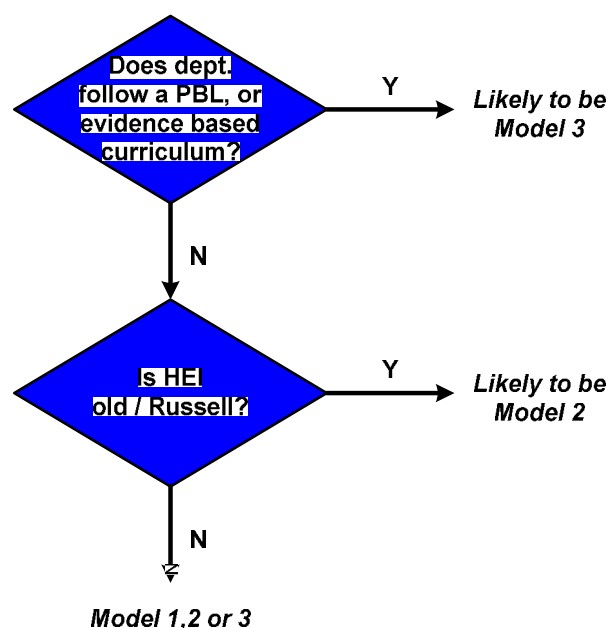


Figure 6.1

From the student perspective, are there any particularly good points or bad points about the approaches taken? And are there techniques that institutions could adapt from good practice elsewhere?

6.8.3.1 Colleges of Higher Education

For example, a College of Higher Education uses third year students to run Internet searching courses for first or second years.

'They're run, like third year students run classes, expressly like teaching students. They run for people who aren't up to date with searching the Internet....It gives them teaching experience and you gain their experience.' [82101, from text units 162-168]

As another student acknowledged:

'It's the first years that seem to be a little timid in asking but it's [help and guidance from the library] there.' [82112, from text units 251-253]

Despite the availability of help from library staff, students may relate better to help provided from their peers. If these peers reinforce the messages coming from staff:

'Certainly from years two and three they need to be leaving the books not entirely behind, certainly textbooks they may and they need to become more reliant upon journals and research resources and that necessitates in the current climate the use of electronic journals and electronic databases.' [82303, text units 144-149]

then the students may be more convinced of the need to look beyond Google and to critically appraise information retrieved.

In another college of higher education a module on effective communication in the first year integrated some searching with presentation skills, and later on, further input was provided in research methods modules.

'We've done an effective communication module...we had to research a food topic using Internet sources and library sources, and then present that electronically on Powerpoint. And at the moment I'm doing Introduction to Research Methods, which uses Excel, it's also with number based information stuff.' [85111, from text units 128-134]

Staff acknowledge that there are problems in giving students a consistent message:

'They're [students here] are very poor at finding information...they restrict themselves to the Internet...and we do try and give them that but...not me personally, but there are modules where they're supposed to be receiving those skills but whether they apply them fully, whether they bother to apply them are two different questions.' [85301, from text units 112-125]

'We're not insisting on the right sort of information gathering consistently throughout the course. Some people always insist dogmatically, where are your references, reference properly, and some people really are not bothered either way and the problem is the students get an ambiguous message therefore they ignore it.' [85302, from text units 84-88]

Students themselves should recognise whether there are gaps in provision, and student representatives should feedback via staff-student consultative committees.

'I know this year we've had sources such as Psycinfo and things like that which are specific Web sites for psychology, but to actually access those you have to go through a process on the Internet and get a password and things like that...and that's something we haven't had any training in at all which would have been...I'm a student rep so it's actually something I'm going to suggest.' [86111, from text units 136-142]

MESSAGES

- **Third (or fourth year) students can be used as 'demonstrators' for first year students. Other institutions might employ research students.**
- **Staff need to be consistent in their expectations of students on information skills**
- **Listen to, and encourage good quality student feedback from formal staff-student consultation**

6.8.3.2 New universities

New universities are often very large institutions, larger than colleges of higher education, and the student community might be expected to be more diverse. In larger institutions support probably has to be more structured, and, from the student perspective, support cannot be expected to be appropriate for their individual needs.

Contrast:

'In the fourth year when we had to start our dissertation we all had these talks from someone in the library saying that we've got all these online journals, blah, blah, blah, um...this is where you find things...um, I can't remember really.' [104105, text units 178-181]

with this comment from a student at the same institution:

'As far as technique is concerned it's all been done this year and all in connection with our dissertation. It was quite lengthy, it was a two hour talk and practical too....They showed use all the databases...they showed us how to access them off campus...what passwords to use...if you've got a title they showed like a spider diagram...They made you think quite a lot and how to use it in terms of plus and minus, commas so we could broaden or narrow our search. So the training here was quite helpful.' [104106, from text units 182-196]

Timing is crucial and events beyond LIS control can affect student reaction to formal training.

'They are quite good at the beginning of each year they give us library sessions I must admit not many people make use of them. The two that I've been to they've gone into the same things. Generally at the beginning of the year isn't when you want to know about it, it needs to be done this time of year when we are all researching. For example, we came down to a mid-placement seminar...and they gave us a library session in the middle of that...we all turned up ready to make our choices for options, we've had our options cut by half, so no one was particularly happy...so we weren't really interested. I went to it but I don't remember anything that was said in it.' [74107, from text units 146-157]

Academic staff use intranets to provide more information for students, recognising that not all students will use the intranet, but that it does provide a back-up. Not all staff are confident in putting up the information on the faculty intranet either (a problem that is carried over to VLE implementation, Section 6.9).

'Yes I think there is a big barrier in confidence in being able to put the information up, and think there are certain people who have sort of worked through that barrier and then realised that it's really quite straightforward...I am very aware that not all students do like using that or find it very easy or logical in their own mind, So I use it very much as a supporting network so that the information is there if they want.' [103304, from text units 220-232]

In large institutions, some support mechanisms will be assumed to operate as clockwork, but personal liaison and feedback between academic staff and LIS staff may be limited.

'[Interviewer: Do you know if training is available for the students?].I have no idea. That is all dealt with by the library. I don't know whether we do any in house training in the final year because most students don't actually sort of do any searching of the academic literature until they get to their final year. We do tend to rely on the library to provide that sort of training because that is their sort of expertise and we do have a very good librarian.' [103301, from text units 242-254]

MESSAGES

- **Large and diverse student cohorts are difficult to please universally**
- **Information skills support mechanisms need to be varied and the timing is crucial**
- **Library and information services staff such as subject librarians may not be able to liaise personally with all the staff in their departments**

6.8.3.3 Russell group (research intensive) universities

Large student cohorts are not infrequent in this group of universities. From the limited data from cycle three, the pattern is not that dissimilar to that of other types of institution.

Students may come in with good A-level grades but their level of IT may still be poor. Large libraries – electronic or physical - can be quite threatening, and structured guidance from academic staff and library staff valued (in a variety of ways).

'It (induction) was pretty helpful at the time...because I wasn't computer literate at all before I came here, overall my skills have improved 10 times.' [94117, from text units 233-235]

'We have been taught how to use the Web of Science by my tutor, and that's very helpful because that's purely scientific and what you need to know...we had an exercise to do and he told us how to, he asked us to find certain things in the Web of Science...I know how to use it now so it's really helpful... [Interviewer: Have you had any training from the library at all?]. yes we've had a session on

how to use journals. We got taught in one of our lessons we didn't get taught in the actual library...because it's quite daunting when you come in and you don't know what's going on.' [87105, from text units 81-94]

'They come up with information sheets in the library and I just picked one up for Web of Science once and I went through it and it seemed fairly straightforward so that's why I've been using that one.' [87110 text units 70- 72]

A clinical medicine department provided different levels of foundation IT training to bring all the students to the same level of skills.

'We had to do a general IT course...it depended because there were three different levels you could do depending on your existing skills... Yeah I think there were a lot of students who hadn't used the Internet so we had lessons on how to use it.' [83103, from text units 99-113]

Some of the IT training was provided by a postgraduate student.

'He was a Masters student writing something on parasites. I don't know how he got to do this but he'd obviously had the training. He showed us how to search Yahoo and sites like that but he didn't really go into much detail about searching the Internet. I think he assumed we already knew how to do that.' [83104, from text units 130-134]

In another institution, in another subject, Law, the subject librarian provided the training.

'We had a lecture by the Law Librarian in the first year...a lot of it was to do with the Law Library itself and the books there but he also talked about the Web sites we could use.' [94103, from text units 128-130]

Students notice that the years below them may need to have more input now.

'I think it's much more detailed...I've noticed now they have it during term time sometimes which...you know first years often ask you questions and you just don't know.' [94104, from text units 190-192]

MESSAGES

- **First year students may have high A-level grades but their IT skills may still be comparatively poor**
- **Postgraduate students may be able, and willing to teach undergraduates about use of specialised services**

6.8.3.4 Old non-Russell universities

Academic staff in the old non-Russell universities also have to balance teaching and research commitments. The subject discipline affects the type of training and support delivered.

From the viewpoint of academic staff in a biomedical sciences department:

'Well I think we can push them [students] in the right direction in terms what particular sites they might use to research a topic which are particularly reliable and provide good information and we can direct them toward certain journals that are held electronically on the, through the library resource and that type of thing so I think yeah we do give some guidance.' [71301, from text units 153-158]

From the student perspective:

'There's certainly been something each year but only in this final year has it been sort of the most useful I would say, it's been most on the Web...I can't honestly remember going into the likes of MEDLINE or anything like that before.' [71108, from text units 138-140, 171-172]

'Last year we had training on, well it was a library training scheme, I think it, that was only for a day, on how to use Cambridge Scientific Abstracts and the library web-pac search thing. And then this year we had a, two sessions on using MEDLINE, well OVID then. Yeah, so I think in the end you, you essentially learn by doing it yourself and learning all the shortcuts. Rather than have somebody telling you do it this way.' [71111, from text units 182-189]

Similarly, a science student recalled the graduated training:

'In first year for I think a chemistry course we had a, an afternoon in the library...we had an afternoon with her [library trainer] basic search techniques...and then we had a further one in third year...sort of like leading on, sort of more to find about scientific journals on the Web rather than sort of wading through them on paper.' [71112, from text units 197-203, 207-212]

In another institution the student year representatives arranged training for their year.

'I mean we did, did have training back in the first year but I mean most people couldn't remember by now and having to do a sort of MEDLINE search. So...we have reps for most of the subjects and each of the different years and what my year arranged...I think they, she did to through the head of the second year for [subject] but the library staff ran it.' [99107, from text units 153-160]

Student peer support also happens.

'I mean there are other students that would give you tutorials and it wasn't formal but they were the ones that showed us how to use MEDLINE, things like that at the beginning.' [99108, text units 136-138]

MESSAGES

- **Large and diverse student cohorts are difficult to please**
- **Information skill support mechanisms need to be varied and the timing is crucial**
- **Library and information services staff such as subject librarians may not be able to liaise personally with all the staff in their departments**

6.8.3.5 Use of e-learning packages to improve information skills

Only one of the students interviewed in Cycle Three specifically mentioned using one of the packages such as the RDN Virtual Training Suite, although it is perfectly possible some of them may have used one of these packages within tailored courseware or the VLE at their institution. At least this student appreciated the support on critical appraisal provided.

'I have gone in and downloaded the, like a personal tutorial on how to use the Internet sites and the pitfalls and all that sort of thing which I found very useful...I just went into the [name of FE college] Web site. And that was also in the SOSIG.' [80103, from text units 279-284]

The analysis of the JUSTEIS interview data indicates that other students (final year undergraduates or research students) could provide additional staff for the face-to-face training sessions provided through Library and Information Services. This would save on library staff time, and that time could be spent developing another strand of information skills packages, tailored packages which are integrated more closely to the curriculum at the institution.

The evidence on the usage of the RDN Virtual Training Suite is limited at this stage of development, but a survey²⁷ on lis-link, conducted to inform e-learning information skills

²⁷ Jordan, Kay. E-information skills: investigating current developments in electronic information skills training within the library and information profession. *Libraries for Nursing Bulletin* 23 (2) (2003): 19-24.

programmes at the University of Bath, suggests that such packages are being used to train students at induction, and also for in-depth training later on. Library staff are using the pre-prepared packages such as the RDN Virtual Training Suite, TONIC, but they are also customising materials produced by other libraries. They may develop in-house materials based on a workbook, a virtual tour, and some are converting their existing package to their VLE.

Advantages proposed for using the pre-prepared packages include the saving of time, promotion of resources often ignored by students and the fact that links are easily built in. The disadvantages are that such packages cannot, the survey respondents felt, replace tailored information skills teaching, the packages may downplay the importance of improving searching techniques and there is a risk that resources promoted may not be those for which a local subscription exists, leading to disappointment for the student. Those who had chosen not to go down this route at present noted that the time savings could be superficial as information skills training online needed to be interactive and that required some development time. In addition, copyright clearance needs to be obtained before some materials can be put up on a VLE (See Section 6.9.5)

RECOMMENDATIONS

- **Third (or fourth year) students can be used as 'demonstrators' for first year students, in colleges of higher education (particularly those with a teacher training department). Other institutions might employ research students to teach information skills and use of particular services.**
- **Academic staff need to be consistent in their expectations of students on information skills – this is difficult to encourage in research intensive universities unless the department follows a problem-based learning, or 'evidence-based' curriculum**
- **Formal staff-student consultation provides a mechanism to get feedback more directly from students**
- **E-learning information skills packages are particularly important for the larger universities²⁸.**
- **Large and diverse student cohorts are difficult to please universally, and for them information skill support mechanisms need to be varied and the timing is crucial. First year students may have high A-level grades but their IT skills may still be comparatively poor.**
- **If library and information services staff such as subject librarians are not able to liaise personally with all the teaching staff in their subject area, VLE development offers one route to ensuring that they get their messages across. Interactive practice of information skills online is recommended.**

6.9 Development of intranets, institutional Web sites and VLEs

More institutions are implementing VLE or MLE software. The JUSTEIS interviews with students and staff asked about their experiences with use of such software, as well as querying the use made of staff and institutional Web sites. The data obtained was analysed to answer questions concerning:

- Student expectations (Do they expect all teaching staff to use the VLE in the same way?)
- Perceived benefits for learning (What are the benefits of such software - do the learning resources complement face-to-face teaching, effectively replace face-to-face teaching or are they an optional supplement?)

²⁸ Parker, Jo. Putting the pieces together: information literacy at the Open University. *Library Management* 24(4/5) (2003): 223-228.

- Development of resources by staff (How do they see the VLEs helping and hindering their teaching, and how do they fit into the disciplinary patterns of scholarly communication?)

The following Section (6.9.1) summarises some of the other JISC-funded research on managed and virtual learning environments before discussing the trends emerging from the JUSTEIS work.

6.9.1 Realising benefits to learning and teaching

The JTAP report²⁹ examining how to evaluate VLEs compared a conversational framework (which deals primarily with interactions between a student and teacher) for VLE functionality with a VSM (Viable Systems Model) which seems a better framework for considering the VLE functionality for management of groups of learners. The conversational framework envisages the workflow actions as:

- Teacher presents/re-describes conception
- Student presents/re-describes conception
- Teacher sets up micro-world activities
- Student interacts with micro-world activities
- System provides feedback on the action
- Student modifies actions in light of feedback

The conversational framework examines the effectiveness of the VLE in terms of the tools available for each of those workflow actions, as well as the ease with which each of those actions can be structured.

The VSM model takes much wider perspective, a course or organisational perspective on the evaluation of VLEs. The communication channels may be viewed as those concerned with resource negotiation, co-ordination and monitoring. The framework for evaluation considers:

- Resource negotiation (how do learners negotiate their learning contracts with the teacher?)
- Co-ordination (can learners collaborate in creating their learning and how is exploitation avoided?)
- Monitoring (how does the teacher monitor whether learning is happening and how can remedial action be taken?)
- Individualisation (how easily can the student find their own resources and work independently, and can they contribute their discoveries to the group?)
- Self-organisation (can the learners organise themselves as a group, using the tools or space available?)
- Adaptation (can the teacher adapt the course in light of experience gained during operations)

The VSM model questions may be applied at course level or at organisation level, but the types of answers obtained will be different. As the JTAP report points out, the traditional formal lecturing in any one institution assumes that students following a course can be treated as similar. Styles of learning support which do not make this assumption, such as seminars, tutorials and group project work, are harder to manage with larger student cohorts and fewer staff to resource these forms of teaching.

Scaling up from a VLE to an MLE is likely to be a major organisational change. How that change is to be cultivated will vary, and a JISC report³⁰ examines the various approaches that may be used:

²⁹ Britain, S and Liber, O. A framework for pedagogical evaluation of virtual learning environments. JISC Technology Applications Programme (JTAP), 1999.

³⁰ Boys, J. Managed learning environments, joined-up systems and the problems of organisational change. 2002.

- Comprehensive (explicitly integrated with other policy and implementation developments)
- Additive (series of sequential components towards joined-up systems)
- Parallel (MLE development run in parallel with other initiatives)
- Autonomous (MLE project concentrated in one area of development).

The approach influences the way the problem is conceptualised, the possible solutions debated, the development presented to staff and students, and the implementation managed to demonstrate benefits and reduce barriers. The report recommends that VLE development should involve students from the outset, focus on content and processes, organisational and educational goals, and encourage alternative visions of the future, thus being problem seeking rather than solution driven.

The INFORMS project³¹ is developing the INHALE project, and is thus attempting to create quality customised information skills units for use in learning and teaching in six subjects (Sport, Engineering, Business, English, Social Sciences and Medicine), working with contrasting types of HEI and VLE.

Synthesising the indications from these three projects, the main questions for monitoring user behaviour are:

KEY QUESTIONS

- How do students view learning with VLEs? (*Do they see VLEs as an extension of the individual teacher-student relationship? Is peer support made more effective?*) (Section 6.9.2)
- How do academic staff view VLE benefits or disbenefits? (*Is better monitoring an explicit objective? How important are the different learning styles of students, and how easy is it to adapt in light of experience during teaching the module?*) (Section 6.9.3)
- How do both staff and students view the policy issues concerning VLE development? (*Do they think that there should be a standard method for developing and using the VLE? How much variation in practice should be 'acceptable'? How important are the links between the learning and the student record of learning achievement?*) (Section 6.9.4)
- Are VLEs being used to reinforce information skills, with or without specific packages devised for that purpose? (*What are students doing with the information provided via the VLEs?*) (Section 6.9.5)

6.9.2 Student views on learning with VLEs

As indicated above, students may feel that VLEs provide them with another means of understanding new ideas (re-describing) (Sections 6.9.2.1, 6.9.2.2). The development of an ongoing dialogue with teaching staff, the development of a learning contract is another possible function of the VLE (Section 6.9.2.3). Some interactive functions could emulate a one-to-one dialogue with a teacher, through doing an exercise with feedback provided on their chosen actions, allowing some individualisation of learning (Section 6.9.2.4). Students might think the VLE provides them with the tools to tailor their own learning environment, and that learning environment might also include some collaborative working with other students (6.9.2.5).

6.9.2.1 The VLE as a learning framework

From the JUSTEIS data, some students perceived the benefits of the VLE in terms of a learning framework, which was specific to their needs.

³¹ INFORMS: Information Skills project. <http://informs.hud.ac.uk>

'It's like a, some kind of framework they've put together' [104113, text units 171-172]

'I wouldn't want to do without the college Intranet which has a lot of material on which is specific to [name of department] students' [104103, text units 183-185]

'Oh yeah - to get lecture notes and general information on our modules' [104109, text units 191-192]

'So when I went onto my own personal Web site on [name of VLE] and stuff it was really, really good, really helpful...gives you all your information about your course.' [104112, from text units 86-92]

'To look at any work that I may have missed, module layouts, the lecture notes are on there...you just think I'll have a double check see if it's on the VLE.' [86120, from text units 131-134]

'You can download the information, print off the information before a lecture. Because it's quite complicated stuff so you can have a kind of vague understanding before you go into the lecture which I think is quite handy.' [97107, from text units 348-351]

'When we have a lecture you can go and find out the lecture notes that's written up about...all the kind of things you spoke about and then there's further reading. And it's all under the modules.' [80102, text units 205-207]

One student suggested that the VLE might be particularly useful at the beginning of a course.

'I think when you first start the course you're a bit nervous, you know you're grasping at straws everywhere. Bits of snippets of information and I find now I'm just sort of plodding through the work more instead of going into [name of VLE]' [104113, text units 174-178]

6.9.2.2 Presenting and redescribing information

In terms of the evaluation frameworks considered in the JTAP report (Section 6.9.1) some of the VLE functions are viewed by students as 'redescribing of conceptions', which are generally something they may use if they wish. Such 'redescribing' also serves as 'presentation' for those students who may not be able to be present at the lecture. There is little indication of much individualisation intended, apart from making the materials accessible at a time convenient to the student.

'I also use it [departmental home page], some of the lecturers put additional lecture notes on the Web. So to back up some of the things they've been talking about in our lectures they put it on the Web so it's accessible here.' [71112, text units 245-248]

'For the statistics we're doing she does put those on the, on the Web site so, yeah, there are, they are there if they're available but I've not accessed them yet.' [71115, text units 335-337]

'There was one thing, there was something last year, I can't remember what it was but you had to do some task on the Internet but normally you don't have tasks to do.' [87103, text units 246-248]

'Every time after lecture the lecturer puts the notes on Internet and we can download it if we want.' [89104, text units 184-186]

6.9.2.3 Developing a learning contract

Some students perceived their VLE management as an extension of the classroom situation with messages from the tutor making the 'resource negotiation' current, and part of their developing learning contract with the teaching staff.

'Yes we have the VLE. Well, that's quite handy actually because I can access that from home as well and they put all the course material on it, any messages from the tutors for lectures, the reading lists are on there and the notes from the lectures...plus week to week the tutors put any information that we might find helpful, which is actually quite helpful.' [86102, from text units 152-160]

Only in these circumstances were students at all likely to state that the VLE was their most vital electronic information service.

'The Intranet is the most useful out of everything, it's the college network and the virtual learning environment...because all the information you need is on that really...both [subjects] also have other little bits, like they have "how to improve your marks in essays"..."statistics for the terrified", which is sort of interactive.' [86105, from text units 106-118, 166-170]

Resource negotiation in some circumstances may not be based on learning needs but on technological limitations. Access to resources off campus resources may be limited.

'They tend to, I mean we can't, the [name] drive whatever that stands for, we can't actually access that unless we're on the university network. A lot of lecture notes and things like that go up on there. Some lecturers will email them to us on our university email address which is something I now check regularly.' [74102, text units 267-271]

Individualisation, and roles and responsibilities in the learning contract may become dependent on having the technical tools.

'Oh yes they do. They send, unfortunately they keep sending it through on Powerpoint and I don't have Powerpoint...like they say you can use it through the uni but I don't like going on the uni, I think it's because I'm so used to mine I don't really like the change on to another computer.' [74101, from text units 242-248]

In some cases the learning contract is very much a re-negotiation of access to resources.

'They don't give them [handouts] out. You've got to access it to get the information.' [82112, text units 329-330]

'Before they always gave them in class but they've decided to cut down on photocopying [Interviewer: And you have to pay for the photocopies instead?]....Basically.' [97108, text units 210-214]

In some instances, teaching staff set out clear guidelines on their expectations of student behaviour, and the VLE should be accessed prior to the face-to-face interaction in class.

'That's vital to the course because one unit we have the lecturer has said that all his notes are going to be on the Intranet. Before you come to the lecture print them off so when you come in we go through them together. So you have to do that.' [74107, text units 162-165]

'We have to like it's weekly so we have to do the online reading before we do the lectures.' [8015, text units 159-160]

In other cases the student decides to do this, somewhat diffidently?

'They put the lecture notes on there [shared drive, Intranet]...I tend to download them before the lessons, so that I can read up beforehand. What a sad person I am!' [82103, from text units 236-243]

In another instance one student noted how current research could be accessed via the VLE.

'Yes, I think they are well into electronic law and things. I think the [name] actually put the lectures, talks [from a conference] on the [university] site which is quite interesting if you are into that sort of thing.' [74110, from text units 321-328]

6.9.2.4 Individualisation of learning and interactive activities

For many students, the main advantage of the VLE was individualisation, allowing them to find resources they needed and learn independently. They could practise at their own speed, and in their own time, and those features can be particularly useful for part-time students or those doing placement projects or field work.

'Oh it's really good actually. I went on the other day because I've got a maths exam tomorrow and it's got like the test papers...and it helps you go through using the best ways.' [75110, text units paragraph 47]

'We were doing a test and there was a practice test that was on the computer that we could log into and do. So sometimes they put them on...it was just like short questions and multiple choice answers...it was dip in and out of when you wanted to.' [85115, from text units 173-187]

'We're actually spending one day a week working in the field, and if your other lectures don't coincide with the people you are working with you can post information and it's there available whether you access it at home or here in college.' [86116, text units 72-76]

Multimedia was particularly useful for illustrating some difficult concepts that are not easy to explain in other ways.

'There's a Web site for our biomechanics module which is extremely good and it has moving parts and stuff like that on it. And it's brilliant...like a book online really...you can say how the limbs interact with each other.' [97111, from text units 266-271]

There was a perceived need for some interaction, not simply re-presentation, but some 'microworld activities' which would allow reflection, or some guidance which would help the individual student with their assessed work.

'At the moment it's [talking of VLE/FE college Web site in early stages of development] still in its youth and it needs somebody like on a regular basis perhaps doing something there to get students to go to it.' [76103, text units 222-224]

'I go straight into the shared drive for lecture notes, yeah. Because here we do [name] sessions and they do examples for us and solutions. Definitely use those. And we have our own web page as well for one of the courses which is interactive' [82109, text units 180-183]

'It was more that he published, he published a lot of books himself. And there was his own page and that you could go to and carry out practice tutorials online then' [85104, from text units 301-304]

'It guides you through the steps of, of you know balance sheets, cash books, profit and loss accounts, things like that.' [85117, text units 196-197]

'All our assignments are posted on there along with comments and directions from lecturers or technicians, so if you're not sure exactly how to tackle an assignment you can look on it to see the notes.' [86116, text units 53-56]

'Because there's information on our courses...so I sometimes check in there, but then we get our results, like lab results posted on the Web, well on their pages.' [87110, text units 115-118]

In other interviews, students seemed unclear about the intended functions of the VLE or use of the institutional Intranet and the VLE was possibly just 'more of the same'. Students perceive that lecturers feel that the VLE will replace them, so that lectures are redundant. Others accept that some lecturers choose to post material prior to the lecture, while others choose to post material afterwards.

'I think if they put lecture, if they put everybody's lecture notes on, nobody'd bother going to the lectures to they've got their ploys somehow.' [71111, text units 272-274]

'Depending. Last term, depending the lecture, some lectures post them before and some after...Syllabuses and things like that tended to be posted before.' [94102, from text units 84-87]

'This time we can't do that [access before]] because the different lecturers don't put the notes up...they put up different notes, I'm not sure, like not as in detail and then you go to the lecture.' [94106, from text units 80-86]

In other interviews, students talked about the ways in which the VLE made independent learning easier and more effective, and often this was clearly related to coursework intended to assess learning outcomes. Individualisation was working for these students.

'Yes and then it's easy also to, when you're doing your own notes, reading you can follow the structure of the lecture.' [82117, text units 271-272]

'It was on the Intranet and then we could use that as kind of practice, and then we had like an in-class test and that was on the computer.' [85111, text units 172-174]

'Yes, it comes up with wee exercises every now and again and gives you the basic principles and tests you on them.' [94109, text units 192-193]

'You do get assessed but I mean nobody else knows about the mark. It's just you, a personal thing.' [96104, text units 156-157]

Some disciplines in the biomedical sciences are making extensive use of interactive learning, computer aided learning packages, as the following interviews with such students indicates.

'And then we can go in there and it talks us all the way through and gives us suggestions. It's the best one to be honest. They have been very good.' [104117, text units 146-148]

'I went into [name of VLE] and I was looking at the, about the next assignment...and I actually did the, there's a programme on there that takes you through some of, you had to question and answer...and I was quite pleased with myself because I did quite well and I was quite chuffed.' [104120, from text units 15-22]

'It was really helpful to use these [CAL] packages ..Well, the tutors make these [CAL packages] up so you can click on a link on the screen and they give you a little tutorial and then a quiz at the end.' [83104, text units 152-154]

There was little evidence (from the student perspective) of teaching staff making adaptations to the course, in light of circumstances, although one student noted that the VLE ensured that they did not miss out on promised teaching.

'For instance last week one of the lecturers couldn't make one of our lectures so he put it on the Internet [meaning Intranet] for us.' [83104, text units 158-160]

6.9.2.5 Self-organisation and student-student collaboration

Similarly, the VSM concept of 'self-organisation', the space or tools within a VLE to allow students to organise themselves as a group outside the teacher's purview, was not in evidence, apart from the following instance.

'For law we had to go on to an area called [name]. You were put into groups of four to five and there were a series of questions which you had to answer and each individual from the group goes in and types in what they think, then you pick a leader from the group and they amalgamate together all the answers and put it on a separate sheet and submit that to the lecturer. The lecturer basically ends up with one sheet of answers from each of his groups and marks it on that basis. The only negative thing about that is that not many people actually did it.' [74108, text units 168-176]

There were a few (though not many) examples of student co-ordination.

'For example CBLs, what we do is that we research a particular topic, each is given a chosen topic and then we all go back research it, do it on our...write it up on the computer, and then we email our project to everyone else, and everybody does the same so then we get everything.' [99105, from text units 200-204]

'It is a good way of doing it really, because sometimes it is very difficult to find, especially if you are a group of five to six people, to find the time to get everybody together physically to sort things out, whereas if you can say right you go off and do this, and bring your results back to the conference, it makes it a lot easier.' [74110, text units 203-206]

Self-organisation for learning needs to be distinguished from the social club groups, and while news on social activities may encourage some students to access the VLE, such postings may be viewed as social clutter to others.

'Sometimes a lecturer will say "I posted it on the Web" and I have said "I'm sorry but some of us don't read it" because a lot of it's to do with rugby matches and parties and stuff like that and unless you're into that scene...you're not going to be looking at it.' [86109, from text units 376-380]

Other students are also mildly curious about the functions which are not apparently used.

'Yes I use that a lot, [name] is good for information because they put things up on there about Union events...then there's the VLE...you can access stuff off that...There's an area for discussion on there which I've noticed there is never anything on, not for any of my courses, but whether it will pick up I suppose the first years now who will have had this from the start, by the time they're third year they'll be using it a lot more.' [86110, from text units 213-220]

There seems to be a major hurdle in enabling peer-peer support functions in VLEs. The e-learning strategy consultation document³² suggests (para 57) that learners should have easy access to interactive design tools which enable them 'to be creative and more active in their learning'.

RECOMMENDATIONS

For students to view the VLE as an extension of the individual teacher-student relationship, teaching staff need to provide some interactive exercises, or some specific guidance on assignments or coursework. Otherwise the VLE is viewed on a 'take it or leave it' basis, a 'resource dump', and many students will not use it if there is no specific reason to do so.

³² Towards a unified e-learning strategy. Consultation document. DfES July 2003

There was little evidence that functions of VLEs which allow students to organise themselves for group learning were being used, or that student-student support mechanisms were encouraged.

6.9.3 Staff views on VLE development

Academic staff were asked about their use of intranets, institutional Web sites or VLEs. In some institutions there may be a stronger emphasis on the managed learning environment (MLE) approach which links the student record to the VLE. Perceived benefits, levers and barriers for further development of the VLE or MLE were identified from the interviews. Of particular interest to VLE development (given the previous research on this) were answers to questions such as:

- How are VLEs viewed by staff (Section 6.9.3.1)
- Is better monitoring an explicit objective? (Section 6.9.3.2)
- How important are the different learning styles of students – is individualisation an objective for staff? (Section 6.9.3.3)
- How easy is it to adapt in light of experience during teaching the module? (Section 6.9.3.4)
- Do teaching staff think that student-student support is important? (Section 6.9.3.5)

6.9.3.1 The VLE as a learning framework

Staff views on VLE development reflected those of students in providing the students with a stronger framework for their studies:

'The one site I developed I put the timetable on, that was the first thing, and then I started doing the links from bits of the timetable to bits of information to support the lectures, but that's not done automatically.' [103301, text units 379-382]

6.9.3.2 Monitoring learning through the VLE

Some staff noted the benefits of allowing students to monitor their own learning, particularly in subjects where students are doing laboratory work which is assessed regularly.

'There's a way of doing so that just their own mark comes up and so that's nice that they can get it in dribs and drabs...Then in some cases the marks would be accrued with time and then the cumulative table might be later on so I usually do it all very privately so they get an idea of how they've done before everyone's finished as it were.' [103304, from text unit 281-287]

'And I don't use the Intranet, But we have a shared drive and I used the shared drive. I've got a folder on the shared drive where I bung things like test results and students' experimental work and that kind of thing.' [85302, text units 184-187]

Other lecturers are considering the possibility, but are concerned about the problems of plagiarism for formal assessment via the VLE.

'I have been considering because there's a site run by [name] that does a sort of self marking multiple choice programme and you can put in your questions and the option...it's not really a thing I would consider as an assessment, more as a practice. I'd like to do more and more online but it's quite difficult avoiding plagiarism and things like that.' [87302, from text units 246-254]

6.9.3.3 Individualisation of learning versus re-presentation

For some staff the use of the VLE by students was very much on a 'take it or leave it' basis, with an advantage for staff in the time saved in photocopying.

'I put lecture notes on there, student folders...it's just for them to print them out if they want to because it saves us a lot of photocopying.' [82119, from text units 148-155]

In some disciplines the ability to integrate and present materials in a variety of formats was believed to enhance learning.

"Or any bits of information they may need for the lecture, any images to discuss or pieces of text, we do that quite regularly, and also maps, places we are doing fieldwork we can put up.' [86103, text units 338-340]

Other staff are concerned that attendance at lectures drops once material is available on the VLE.

'I run a course on plant physiology and I put all the course notes on the Web...and then after I've done my lectures I put my lectures online...before I'd actually put them online I didn't tell them I was going to because I was worried they wouldn't turn up for the lectures so I didn't warn them in advance, but before I'd even put them on mine I'd had some requests for copies of my slides...I won't tell them the lectures are online until the last one. I don't think there's a lot of staff do that so it's not something they expect.' [87302, from text units 56-74]

This is seen as a disadvantage, particularly when lecturers believe that:

'Students don't take the information in as well if they are not writing it down.' [86301, text units 88-89]

Teachers should teach, but many teaching staff in universities may need to reflect on what they think students should be doing in their allotted learning time. For a standard 10 credit model (QAA) there are 100 learning hours of which lectures may take up 20-25 hours, preparation for assignments or exams nominally 30–35 hours. What is meant to happen in the remaining 30-40 hours? The predominant lecture-based model seems less relevant for intensive programmes such as graduate entry programmes for medical education. Students have to direct themselves, rather than be directed.

'It's a vital part of [graduate entry programme], it 's not supplementary. The web-based resource is really integral to that because...that course is very heavy on self-directed learning. And it's fine to give a textbook reference but then you have 36 students standing in the library and there's only the one copy.' [99301, from text units 271-277]

6.9.3.4 Adaptation during delivery

Other staff are moving towards a different perspective of the function of the lecture slot, but for this lecturer, the VLE provided the basics allowing the adaptation during delivery of the module to occur during the lecture slot.

'What we do for most modules is to up the same information that we still put up on noticeboards so things like details of assignments, reading lists, outline of the module, that would always go on for everything, and then we would also put on short summaries of the lectures which would be two pages in length, which are summaries rather than the whole lecture, so we're not, so there's no possible encouragement for people to think "Oh well, the whole lecture's on there, I don't have to bother coming in" because we do feel that would disadvantage those students because they're not there to ask questions if there's something they don't understand or very often what I actually write I then amplify in the lecture itself where particularly, I mean there may be some new issue that has just come up that, or it may be that someone may well ask a question about some new find

and then I talk about how that fits into the context of the general issue.' [86318, text units 175-190]

Some staff would like to hide solutions to problems until students have had a chance to try (and try harder) and at present this is not possible.

'Somebody puts them [model solutions] up for me every semester. If they've been doing practice problems I would ask for these to be put up at the end of semester because...I want them to be trying hard to do the problem on their own without giving up and looking at the solutions too early.' [97302, from text units 414-418]

6.9.3.5 Self-organisation and student-student collaboration

Some staff mentioned peer support as an objective of the VLE development.

'Yes, a whole variety of tools that you can use...You can also put your teaching notes on there they pick up...They're [students are] encouraged to use it for their own support, for their own help, peer support, they each create their own Web page as part of Web CT where they put on their own strengths in terms of IT, areas they think they need to work on so that other trainees can look at them and offer help and that kind of thing.' [82301, from text units 180-189]

Other staff seemed to feel that discussion forums should be 'teacher-led' and had heard mixed reports of the success of discussion forums on the VLE.

'I have never used and I'm not sure any of the other staff have used the VLE as like a discussion forum within the class but only because I think it was tried by one or two members of the staff on other courses and it didn't really work, students didn't participate enough.' [86303, text units 174-178]

For other staff the idea that self-organised learning might be possible within the VLE seems novel, as the VLE is seen as completely separate from face-to-face support for students.

'If they can only come into college for classes, then go home and access in their own time the course materials...that's certainly an advantage of the VLE...one good reason for encouraging its use in a support role...We've had discussions about this, we are much more interested in discussion and debate and face to face work either within the class as a whole, or within the student support units, study groups the students have formed. We are not really interested at this stage of running a system where you have just a virtual learning.' [86303, from text units 225-236]

On a more technical, IT-based programme, students have been encouraged to design tutorials for other students.

'One of the things that I've been doing for a number of years now as a third year project is to actually get students to create tutorials as a project. It teaches, they learn how to use web design packages. The original scheme was that these, if they were of good quality we would actually add into our Web site so that other students could actually benefit from them, but hitherto there have been quite a lot of problems with them...they don't run when you transfer them.' [87301, from text units 254-261]

RECOMMENDATIONS

For many teaching staff the first benefit of the VLE being used as a store for handouts and powerpoint presentations is the time saved in photocopying for students.

Moving teaching staff beyond the 'resource dump' stage requires staff to shift from a lecture-dominated model of teaching, to a model which explicitly encourages

individualisation. This is easier to do in a discipline where students traditionally learn through doing problems and exercises.

VLE developers need to stress the benefits of adaptation during delivery (hiding course materials until the appropriate time), and the benefits of monitoring student learning.

Teachers need guidance in making provision for student peer-peer support via the VLE.

6.9.4 Policies and approaches for VLE development

Some institutions are making a strong link between VLEs and student record administration (the MLE approach) while other institutions are developing VLEs and their student record systems on parallel tracks, with little connection between them. Student and staff interviews were analysed to assess what students thought of VLE development, what the perceptions were for the critical mass of academic staff using VLEs (6.9.4.1), how much support was necessary from management for teaching staff to use VLEs (6.9.4.2), how the functions of VLEs and MLEs compared (6.9.4.3) and what some of the levers might be (6.9.4.4). Gaining recognition for e-learning design skills may or may be recognised (Section 6.9.4.5).

6.9.4.1 Getting to critical mass in VLE usage

VLE development is patchy and several students commented on this.

'No, not a lot this year. We used it quite extensively in information modelling last year as a second year module. We had to do a sort of weekly assignment and post our answers on [name of VLE]. We don't use it very much at all this year.' [82103, text units 206-209]

'I used it [institutional site] last year just, I had an assignment on business that it came in handy 'cos all the documents are on it, that's the only time I ever had to use it.' [85108, text units 208-210]

'There are some lecturers that do put them up and others that don't but you need them to because you don't understand the lectures.' [87105, text units 161-162]

It is difficult to gain much idea about the critical mass required to engage students in greater awareness and use of a VLE, but one could speculate that use would have to be continuous, even if only module per semester required use.

'The people that put theirs on, in the Powerpoint presentation, I think you can access that through the Intranet site...I haven't done it, no. I know that some have got theirs on there though.' [85111, from text units 220-226]

'[Interviewer: Do the lecturers put their notes up?] Some do yes, about a third of them do. [Interviewer: If they do, do you use them?]. Yes I do.' [87110, text units 121-124]

'At the start of every semester you've had at least one module where you have to get your notes before your lecture and that's done via the Internet as well.' [94108, text units 103-105]

Several students commented on what seemed to them to be a puzzling variation in practice, when they perceived a need for the VLE to be used as a learning tool, with individualisation of learning.

'Some of them are and I'm not very pleased with the way they've handled that. My lecturer on [name] has them up and the other two don't bother...we were scribbling notes down from his notes whereas if we had it on the Net and then we came to the lecture for additional notes on that area it would have been

easier...you've got to have 80% attendance to pass the module so you know, you have to turn up anyway.' [94117, from text units 271-283]

'They, some, it's funny because some do and some don't, I mean some you'll have a whole module covered where the lecture, lecture notes are all in the Intranet...Some people put questions on the Intranet, or you can get access to questions, but not that much and I think that's something that could be improved, But I think I don't know if there's a reluctance to use it by them, on their part, so maybe if they're all used to giving out hard copies.' [99106, from text units 288-296]

6.9.4.2 Supporting teaching staff in VLE development

Teaching staff, on the other hand, may require some time to experiment, to become comfortable with use of a VLE, and appreciate some freedom to develop their own approach. The disadvantage is that such expertise may not be shared with colleagues.

'You can really put on there what you like, so I would put in the handbook that I give out...provisional marks you can put as well so they get information through that, Internet sites that might be of interest, so anything that you think that will support the module you can put up there.' [103304, from text units 272-278]

Students perceive that some degree of computer literacy is required by academic staff to use the VLE, and staff agree with this.

'But now I'm starting to find more drama related stuff on there and people are starting to get more used to it and putting more stuff on there to help us more. They tend to be a bit more computer literate in psychology, especially the people that do SPSS as well.' [86108, from text units 134-138]

'I've got my course tutor is very quite backwards actually using the Internet, but most of the people they do lots of Power Point presentations and then they put the notes on the Web and you can access them later... but then other ones they don't even use their own email address let alone put notes on the web...I think they need a bit more training as well.' [87106, from text units 158-165]

'I hadn't done because I didn't know how to do it...I have been to several workshops...on how to put material up...it works best if it's in html format and actually doing that is fairly straightforward if you want to do something very simple but as soon as you want to do something a little more complex it gets difficult...loading things up there is not as easy as it should be...but my main problem is that an awful lot of my material is not really in the right format to load on ...and copyright issues.' [103301, from text units 7081]

A College of Higher Education lecturer noted that a heavy teaching load meant that the investment in time to change over to VLE presentation was immense.

'Not that I don't want to put notes up on the Web site. The problem is with 20 plus hours of teaching a week I just do not have time.' [85301, text units 174-176]

Other staff see no time advantages in using some functions of the VLE compared with the face to face model.

'I took a course in how to do that [formative assessment for exercises, problems] and it was my feeling that if you are actually going to do that then it's just as much work as ...manually by actually seeing them and I'd rather see them than do that.' [87303, text units 22-25]

Postgraduates with some teaching responsibilities may be able to support teaching staff in VLE development.

'As the technician within the department I have access to all the archaeology modules and we can post up our information on there and it's got a facility for

having discussion groups within the VLE as well which although I haven't actually used so far I'm going to, it's quite useful.' [86103, 331-336]

6.9.4.3 VLEs versus MLEs

Students' views reflected the 'top-down' usage of VLEs, which are viewed primarily as something for the teaching staff to use, to direct students in their learning.

'No, I think the Intranet would be mostly for the teachers and staff to use to post things up, but I don't think...well, the students can access it but I think it's mainly for teachers.' [88111, text units 178-180]

'It depends on the lecturer a lot as well...some lecturers will use it and say you have to go and check this...I don't use it for communicating with other students, I just use it if a lecturer puts something on there.' [74112, from text units 227-232]

One or two students mentioned the MLE approach, tying in the student record to the learning environment.

'Yes, information skills is online, they've got a Web site and I have a booklet at home when I need to check up how we do stuff. It's mainly [name], courses at [name] that have Web pages, reproduction...as well, it's just really good because you can just check up, they put all the results up on it for our exams...it's just off any computer you can go onto the Web site, then you've got your own candidate number which no one else knows so that mean you can keep it private.' [87103, from text units 230-242]

6.9.4.4 Integrating research into the curriculum

Some research staff may be culturally inclined to have material in the public domain and the idea of a teaching and learning Intranet may be rather alien to them.

'I haven't used it but there is a facility to put lecture notes on like a public drive where only students can access or you can also put stuff up where anyone in the world can access....The only thing that I have put up is research strategies and summaries of research projects which we have put out completely in the public domain.' [74301, from text units 305-311]

In this institution (an old non-Russell university) the policy seems more to integrate the research and teaching interests of the lecturing staff for VLE development.

'I've actually got a meeting the week after next with the virtual environment people from both the research point of view, different things we'd like to do, but also form a learning, teaching and learning point of view as well.' [97304, text units 224-228]

This lecturer (from a College of Higher Education) wished students to access research articles published by the staff.

'Not lecture notes or handouts [on institutional Web site]. I do put past exam papers and one or two, say some research papers I've published. If they're relevant to a module I put them there.' [82303, from text units 230-232]

Policies for research promotion at this Russell group university emphasise research activity by group, rather than by individual, and this means that staff may be less inclined to develop their own pages, or link their research to teaching.

'I don't have my own page, no. The extent it goes to is that our research group does have its own page on the School Web site and that lets students access it to what the research is about...I would find it [more material for students on the institutional Web site] useful but whether the students could be encouraged to utilize that is another matter. I suspect that's what the problem would be.' [83301, from text units 150-163]

In some subject disciplines the problem of copyright recurs regularly, particularly for images.

'Our advice that we've received is that we should only put on the Intranet things that are our copyright or the writer's copyright...I show a lot of slides in my lectures...we also have big personal slide collections and that's something that one day we would like to try and load on.' [86318, from text units 191-194, 220-222]

6.9.4.5 Tailored to need versus off-the-shelf software

For this lecturer, time spent in gaining staff ownership and expertise could be wasted if the institution changed to a commercially available product. At present such design skills are not formally recognised, of course³³.

'We are almost certainly going to have to abandon the VLE as our own product and go over to buying something off the shelf and I mean a lot of time went into making that easy for all the staff to use and that's its great advantage and so I'm concerned that we could end up with something in worse case where we go back to one or two of the technicians doing everything which will slow things down.' [86318, text units 272-278]

RECOMMENDATIONS

Increasingly, students may expect a minimum level of VLE support, though some variation in the nature of learning support from module to module is expected.

Many students like to be able to monitor their own learning and the MLE approach will be increasingly important.

All institutions with research active staff might have greater staff buy-in to the VLE if the VLE could be seen to support their research interests, and the integration of research into their teaching.

More recognition of the skills required to design and author e-learning materials is desirable.

6.9.5 Information skills and VLEs

One of the potential problems with VLEs is that the framework for learning becomes so comfortable that students might rarely venture beyond the VLE to access other learning resources. As Section 6.8 indicated, institutions with large student cohorts might need to support information skills training within the VLE. There is, however, the problem of ensuring students learn how to appraise information which has not been selected for their use. For some disciplines, and institutions it may be difficult, at this stage, for teaching staff to provide appropriate Web-based resources within the VLE for critical appraisal exercises that are relevant to the discipline.

Some of the current problems might be resolved once copyright problems can be overcome (Section 6.9.5.1). There seem to be some deeper problems concerning the value ascribed to Web-based sources, and the value of 'electronic' as opposed to print-resources in some disciplines (Section 6.9.5.2), and these affect views on the appropriate process of critical appraisal.

6.9.5.1 Limitations on resources

At present, teaching staff may be limited in the type of materials they perceive they can integrate into their module on the VLE.

³³ Ibid

'I just have the Powerpoint presentations on whatever else it happens to be on the Intranet on the VLE for students to use. Reading materials, that's a slightly different thing, because we can't have the papers, journal articles or book chapters on there but we have the reading list and so on available.' [86303, from text units 190-195]

6.9.5.2 Critical appraisal skills

Students may perceive integration of critical appraisal as exceptional.

'Only in my tutor group. I don't know if all tutor groups do but my tutor is very much into the Internet and using computers and he encourages us to, he gives us tasks to find out things and using the Internet, using all the search engines.' [87105, text units 173-176]

If the VLE is to be the main resource, or pointer to resources, then students still need to be able to appraise information as these (few) students noted.

'We don't get taught that all research is bad research, we get taught that there is always something to be learned from the study but to be aware of the limitations.' [74114, from text units 141-143]

'A lot of his assignments are based on research. We had to research Linux...and Windows NT and compare them and report which one we'd go for, for a scenario type of thing... You've got to find that information, they give you it, you go out, find it.' [82102, from text units 208-213]

'So in the first year everyone was trained to do the research and know what they're doing when we had to go out and do a research project.' [82108, text units 139-141]

'No, that was the psychology department who did that because it was so specifically looking for how to find sort of psychology information and how to assess whether a Web site is a good source or whether it's not a good source and so on.' [86105, text units 94-97]

Students perceive conflicting messages about the use of Web sites in their coursework and the problem of secondary referencing.

'Well I did actually ask them a while ago when we were allowed to use Web sites in our essays, and they said as long as you reference them and as long as you think the information is reliable, because I meant the thing is if we do use it and the information isn't reliable then that's not our fault, it's the Web site's fault, so we don't get penalised for it.' [86110, text units 73-78]

'So like when you do your essay you are expected to find exactly who said that, but it's difficult to find primary sources, most of the time you can find the information but it's in a book written by somebody else.' [86111, text units 158-161]

'I did a talk that involved using critics of Madonna, for example, do for contemporary music and popular culture you can use it. Sometimes I think it's a bit risky, It's quite hard to footnote your resource if you find something on the Internet, it's a little bit tricky, Sometimes it's not really valid as a source. But if you can use something from a Grove article that's fine because you can source that.' [95101, text units 87-93]

'I sometimes use the Internet for research, something for an essay and things. They try and encourage you not to use the Internet for things like essays for reference...For your own benefit just when you're, to help you learn about the subject but you're not really supposed to use them for referencing your essays

because it's not, it doesn't hold much weight basically. [97108, from text units 125-138]

Other students stressed the importance of awareness, and practice to develop the necessary critical appraisal skills.

'I think, I don't know, I've just got used to it after a while. A lot if you think someone's trying to sell you something then you know that maybe it's not the right sort of place. If, if it's got a title like University of so and so, or you know this research you whatever company, or then, if it looks legitimate then, then yeah and if it has like an author then, a stated author and maybe what their position is. But I think it's just a matter of getting used to it.' [99106, from text units 381-388]

If you go on [to the Internet] and don't know that someone can go on and put their opinion on you might think that's fact...what comes up first is all the titles, the year it was done, and you just scroll down till you see one that you think is for you...you can have amateur aromatherapy, or you can have how aromatherapy compared to conventional medicine, then you know it's someone who knows what they are talking about.' [98101, from text units 103-105, 140-144]

and the tutor perspective at the same College:

'I teach on Medical Sociology, and we do things like alternative medicine, so you say "Where did you get that information from?" There is so much out there on the web from academic research right down to some guy who will cure the world of cancer – I can't belittle Web sites but that's useful as well because you say "@What's credible, what would you use for an academic assignment?" ...They are given internet search engines and most useful web sites. There is a huge chart down in the LRC on Web pages....a lot of them start cruising and exploring the web in a way that because it is a non- threatening subject like aromatherapy it's generally interesting and they often come back saying "I've done loads". And then when they get to the more structured, the more formalised stuff, like the Social Policy stuff, they're confident because of their more leisurely introduction to the Web.' [98301, from text units 50- 68]

For some students, the emphasis is more on collation and interpolation.

'We have done quite a lot on the Internet at the moment because we had to predict for a collection. So had to kind of look on fashion Web sites and look at different collections and stuff.' [93106, text units 91-93]

'We can't just do it on our own we have to like, instead of using, we have to because in our marking when we get our work marked we have to show evidence of using IT and Internet and typing, using other sources, other, rather than ourselves, our minds and things.' [93108, text units 123-127]

RECOMMENDATIONS

Information evaluation exercises could be far more prominent in VLEs than they appear to be.

Instructions to avoid citing Web sources do not encourage students to practise appraisal of Web-based sources. The subject discipline will influence the type of skills required, but some students are getting conflicting messages about appropriate use of EIS and the Internet.

Appendix 1.1 Executive summary for JISC Committee for Awareness, Liaison and Training

Key messages

Academic and tutorial staff are the main influence on students' decisions to use particular EIS (or not).

Library and learning resource staff need a flexible approach to working with academic and teaching staff to support use of EIS for learning.

Information literacy hierarchies built around the use of printed information may not reflect the way students search the Internet (and what they learn in doing so).

Students are growing more confident in their use of EIS, although there are disciplinary differences in the level of confidence and the type of electronic information resource used. Both HE and FE students judge content by the search engine standard.

The JUBILEE toolkit may be used to assess the level of development and integration of electronic information services into the curriculum. However, departments, and institutions, follow different models of information and learning technology support. Professional and vocational requirements (law, evidence-based practice in medicine) make a difference to the approach adopted.

For those involved in awareness, liaison and training the implications are:

Academic and tutorial staff are the key to greater take-up of content. The vast majority of libraries signal availability of services, but students will not use the services unless academic staff encourage students to use the services.

Question: *What is the best route to take to ensure those responsible for staff development take this message on board?*

Library and information service staff, with support from JISC services, need time to work closely with academic staff to discuss needs, and evaluate opportunities for integration of electronic information and learning resources into the curriculum.

Question: *How is it possible a) to promote closer working relationships at the institutional level, b) account for different disciplinary needs but c) ensure that wheels are not re-invented – time pressures demand some fast sharing of experience.*

One size does not fit all for ILT development, but some models work better than others.

Question: *How can institutions be encouraged to take a more productive strategic approach? Will QAA or institutional audit help?*

Selection of resources for Virtual Learning Environments should take into account the discipline, the particular learning needs and skills required and ways in which learning can be made interactive.

Question: *How can VLE development be 'pushed' in the development of appropriate information skills for different disciplines – can progress towards realisation of benefits be monitored?*

Views on content provision – the gap between expectations and reality

Gap analysis at some sites suggests that there is a problem of managing expectations. Library Web sites can, and do make content available (Figure 1), and LIS (Library and Information Service) staff and academic staff may think that students are retrieving appropriate information, but students may actually lack evaluative skills – something students may realise themselves as they learn through trial and error. (Figure 2).

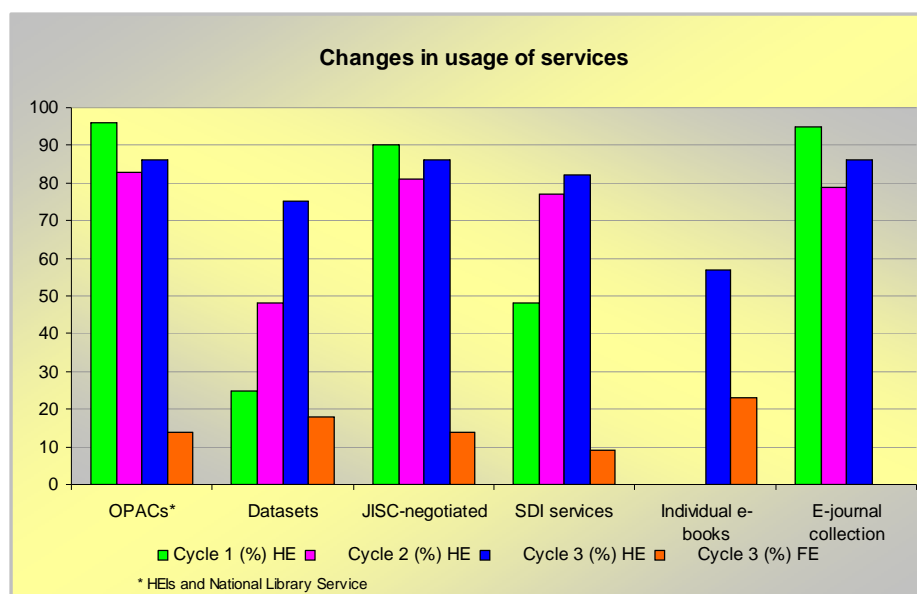


Fig.1 Percentage of LIS Sites with Links

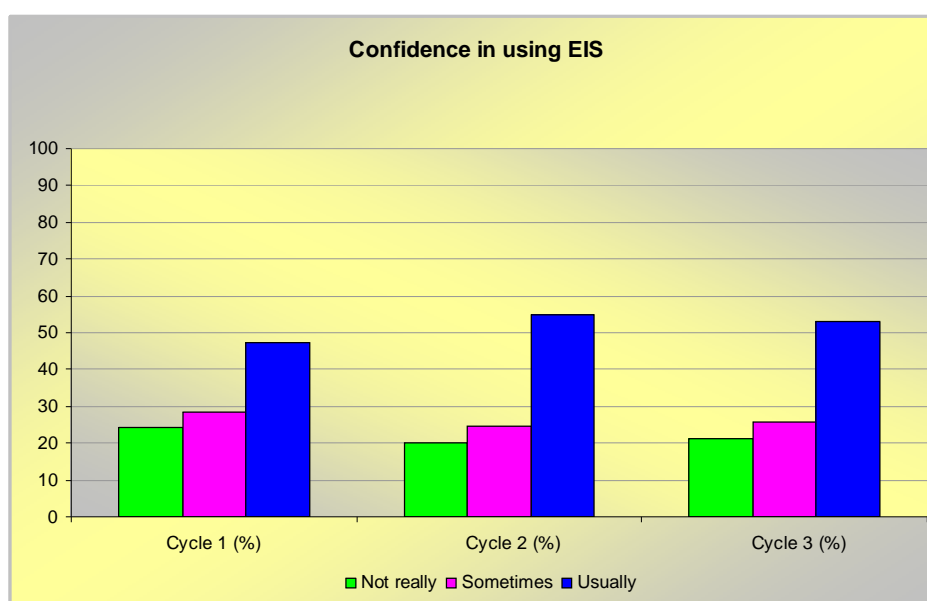


Fig. 2 Confidence in the use of EIS

Managing the development of ICT in further and higher education and research

The EIS toolkit (available as a Web-enabled prototype) at <http://www.northumbria.ac.uk/imri> may be used by managers to assess how well EIS are embedded into strategic and operational planning in a department or discipline in an institution. Five stages are characterised: baseline, change, congruence, embedding and full integration.

One size does not fit all – there are disciplinary and institutional differences in the approach taken to ICT development and learning support. Three models of ILT support found among HE staff are:

4. Follow my leader (*Sole IT enthusiast, other colleagues of a wide range of ability*)
5. Free market – laissez faire (*Staff aware, little evidence of central direction*)
6. Collective – team push (*Strategic integration of information skills into the curriculum*)

While Model 3 may appear the ideal from the teaching and learning perspective, departments with a strong research focus may be Model 2 as that is partly what makes them successful in research. Institutional strategies for ILT support need to take account of these differences, as well as the requirements of departments with specific professional and vocational requirements (e.g. law). Departments where problem-based learning or evidence-based practice are pre-eminent requirements are likely to value information resources and take-up of resources will be different from other departments (Figures 3, 4).

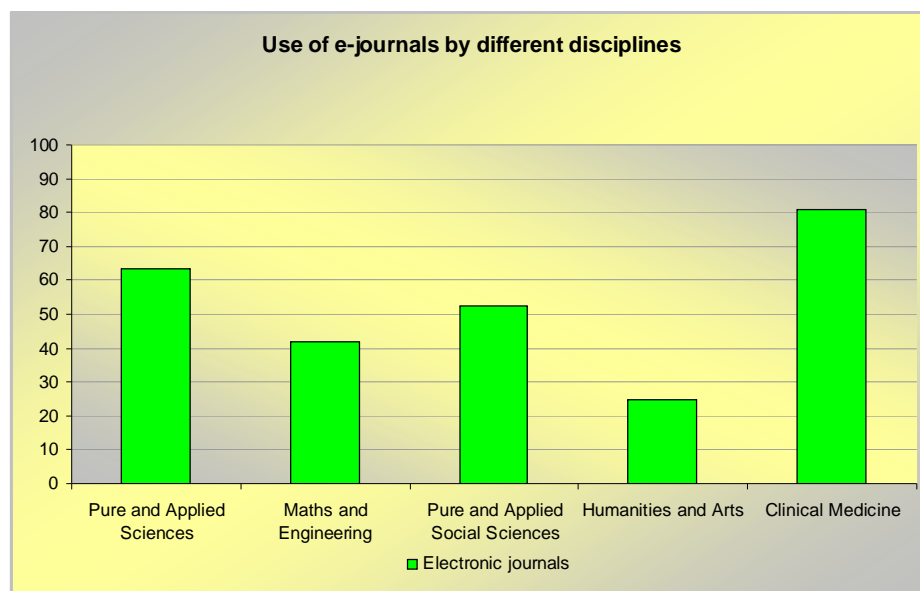


Fig.3 Use of e-journals

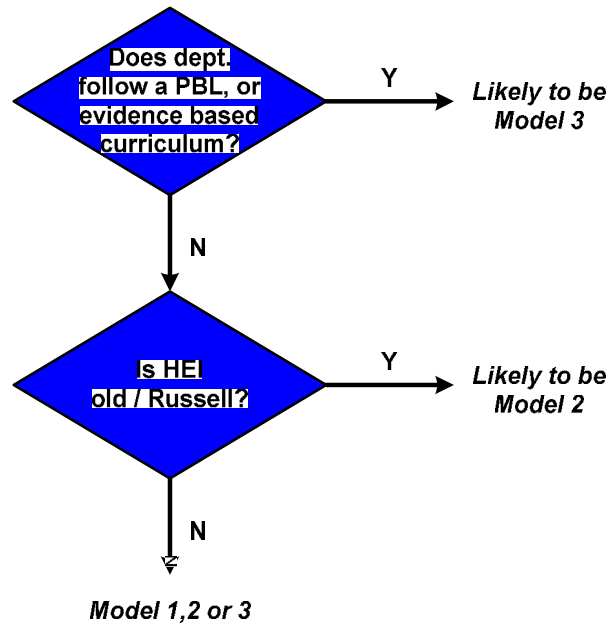


Fig.4 Organisational models of ILT support

Embedding information skills in VLEs

A main change is the growth of VLE usage. Students have adapted very quickly from using lecturers' web sites (not necessarily at their own institution) into using the VLE (Figure 5)

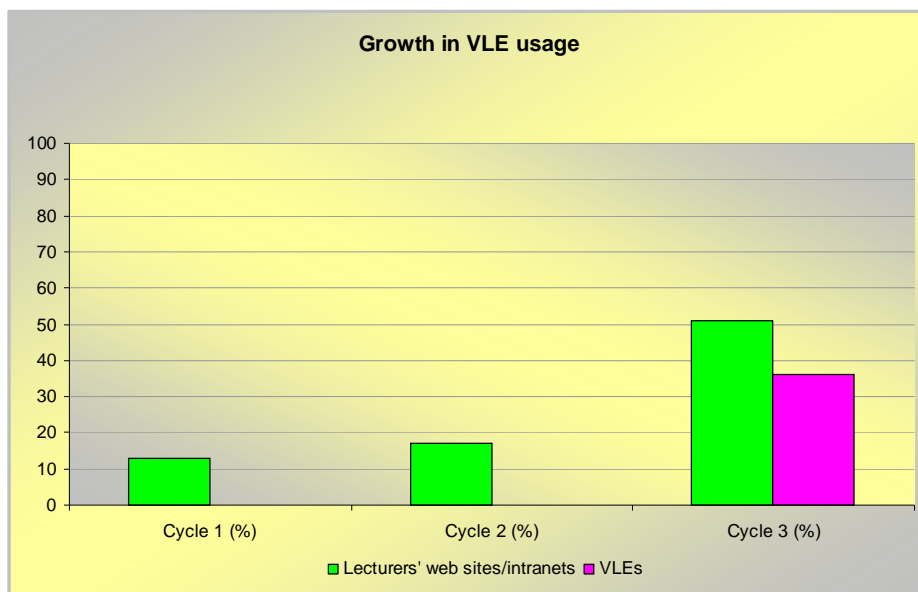


Fig. 5 Growth of Intranet / VLE usage

Science students in particular appreciate interactive sites which provide solutions, answers (put in the data collected, obtain the answer. VLEs provide similar question and answer services and students like this support for formative assessment.

How might VLEs support better information skills? The claims and expectations of VLEs do not always match the practice on the ground. One of the observations of the Framework was that search engine dependence meant that students could successfully obtain material for assignments without practising some of the lower level skills. (Figure 6)

While plagiarism is more obvious if students stick to the resources in a VLE, they may 'compare and evaluate' information even less, unless this is presented as part of a learning exercise within the VLE.

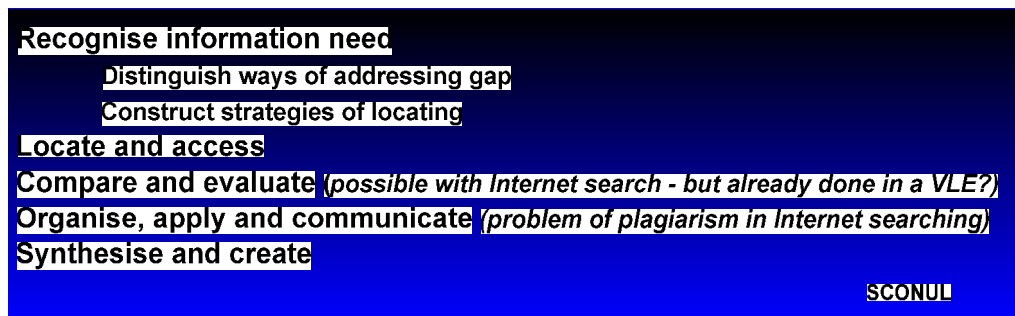


Figure 6 Information skills hierarchy – for search engine searching

One area that must be considered is the progression from FE content and skills through undergraduate content and skills to postgraduate content and skills. Some information skills may be context-sensitive, others are not, but the boundaries may be discipline-specific.

Implications for staff development

Academic staff are key to the effective use of EIS by students (Figure 7). For postgraduates, library/IT courses rank more highly than peer influences.

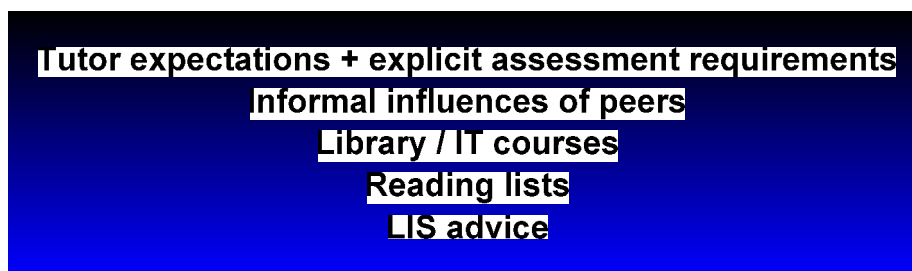


Figure 7 Influences on use of EIS by undergraduate students

Evidence from the framework suggests that in some disciplines staff are aware of their role in helping students to evaluate EIS – and view this as a huge problem. Informal staff development and support from the LIS staff may comprise:

- awareness raising
- advice on comparative benefits of various EIS
- collaboration on purchasing EIS
- provision of information skills training (particularly in the sciences)
- informal support

Activities concerned with collaborative purchasing and provision of information skills training require a degree of trust in the relationship between LIS staff and teaching staff. One effect of having EIS available on the desktop for teaching staff is that opportunities for informal contact between the library and teaching staff may be decreased, particularly in larger institutions.

LIS staff have to be very flexible in EIS skill support, adopting contingent approaches depending on the situation and the discipline. As one senior librarian suggested in Cycle Three:

'We encourage and I have to say the key teaching staff are taking us up on this, we encourage the teaching staff to book sessions within their teaching time. There are three ways that that can be done..

...There's still quite a lot who send them off, they just tell the students they've got an hour and a half or an hour in the LRC and....they don't liaise with us at all about what they want us to do with the students. The students come, they don't actually know why they're there, they just know that the session in the History block on that Friday is with the LRC. Very, very frustrating....

..Um, the second one is they talk to liaison in advance and suggest topics to search for etc. but don't come to the session. That's not too bad....

...But the third one and it's the one we're trying to get new teaching staff to do, is they talk to us in advance so that the workbooks that the students goes away with and that we use in the session are tailored for that particular module but also the member of staff stays...

...and we actually want to take that one step further, it's happened once, which is where the teaching staff has actually held the session and has asked a member of IMS to support and we don't think that's a step back, we think that's wonderful.' (Cycle 3, JUSTEIS)

MLEs, VLEs and information systems in higher and further education – future scenarios?

IF the IDEAL is:

- vision of the educational institution as a 'knowledge community' (Figure 8) with policies for knowledge products (learning and research) to ensure proper dissemination and use within and without the institution
- Strategic support from the centre to ensure that:
 - learning and teaching strategies focused on quality learning for all students, with EIS, and ILT integral to quality learning
 - appropriate ILT support models for the needs of the disciplines within the institution
 - staff development for new teachers to incorporate awareness of use of EIS and the need for staff to help students with the higher level information skills which may be discipline-specific
 - commitment to funding over years, rather than on an annual basis
- National agencies to support teaching and learning and/or research to provide:
 - encouragement for staff to share experience in development of good learning materials which embed practice in information skills
 - minimum recommended qualifications and recognised pathways for CPD
 - minimum recommended standards for training in ICT/information skills
- Professional bodies to provide
 - support for lifelong learning in the discipline/vocation
 - encouragement of evidence-based policymaking, and/or research support
- Students to have:
 - access to EIS as easy off-campus – anytime/anywhere/anyway – as oncampus
 - support and encouragement to use EIS effectively in their learning and research
 - seamless support between further and higher education – and also before and beyond?

WHERE are the GAPS – and what evidence is there from cases of good practice that there are solutions?

Identified gap by M&E framework	Possible solution	Responsibility of
Easy performance monitoring for LIS managers – usage statistics for EIS getting more comparable but still problems	SCONUL, CoFHE and UCISA to work on development of common framework for FE/HE requirements	EIS publishers ATHENS (?)
Licensing deals that are not flexible or which do not cater for FE college needs	Site licences – is a trading permit policy possible to allow sites to jump in, jump off, and part-exchange more easily?	NESLI
Lack of awareness of implications of new publishing models on the 'knowledge community'	Needs strategic awareness at senior management level of the cycle + UCISA and Resource/CILIP?	Research Councils + AUA?
Academic staff unwilling to commit time to VLE development – personal benefits unclear, combined with unwillingness to share teaching materials?	National Learning Network	HESDA, Ferl, e-University?
Lack of institutional response to move from PC + email to mobile technologies	UCISA work?	JCN, UKERNA to provide strategic direction
Arts and Humanities students less well supported in ICT-focused research training	Adapt existing training guidelines	Research councils

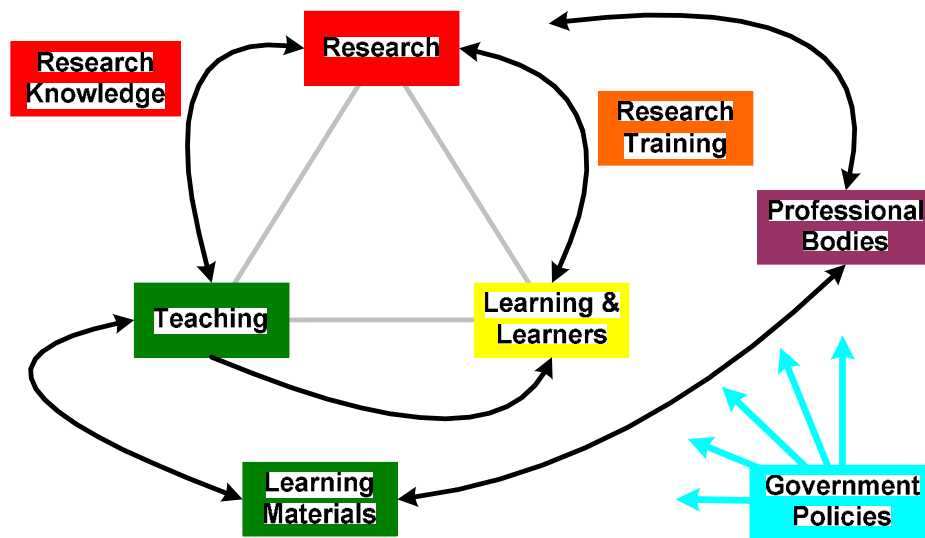


Fig.8 Knowledge Production

Appendix 1.2 Executive summary for JISC Committee on the Information Environment

Key messages

- Concerns relating to provision of EIS are consistent throughout the three cycles: resource constraints, publisher pricing models and site licenses, and digital presentation and archiving. Institutions find it difficult to tailor deals and journals to meet their user demand, particularly in the FE sector where the student body is more diverse.
- Library and learning resource centres are actively providing a wide range of EIS resources, many of which are JISC-negotiated. Online hosts such as DIALOG and EINS have been largely supplemented by JISC and CHEST mediated deals. In cycle three there is an increase in resources made available through deals, and more gateways are being made available through ILS web sites.
- Students use search engines, particularly Google, to find information. Other content services are judged by the search engine standard. The growing popularity of electronic journals is related to the ease of access to full-text information.
- Virtual (and managed) learning environments (VLEs, MLEs) could, if implemented carefully, increase appropriate use of electronic information learning resources.
- Students increasingly require off-campus access to their institution's electronic information services and resources. Barriers include problems with passwords, IP addresses and licensing restrictions.
- Text messaging is the preferred mode of electronic communication for many students.

For those developing the information environment, the implications are:

Content services may need to be pushed to staff (e.g. via Zetoc)

Question: *Is there an easy way for staff to set up 'MyInformationEnvironment'?*

Licensing for off-campus students needs to be simple, and deal with such anomalies as access being possible for HE students at a franchise FE college – but not their FE tutors.

Question: *Given the need for seamless access to HE, are there ways of setting up FE/HE deals regionally which give the required flexibility – a UK Libraries Plus scheme for EIS?*

The design of VLEs will be made easier and more effective if academic staff can use a variety of 'learning objects'. Maintenance of such module areas is a future concern. An immediate concern is skills among library and academic staff.

Question: *Are academic staff increasingly going to want to put their articles, book chapters on the local VLE? What are the intellectual property implications of VLE's?*

Departments and institutions need to set up mechanisms to communicate with students by text messaging.

Question: *Should all students be made responsible for keeping their contact details up to date on a registration site? (given the problems of multiple emails, lost mobile phones...)*

Access to electronic information services: the information provider perspective

Over the three cycles, the growth areas are in the take-up of SDI services (attributable to ZETOC), and datasets, which are also used by some FE colleges. There has been little change in the number of HE sites linking to the OPACs of other institutions (Figure 1), nor in the overall take-up of JISC negotiated services such as BIDS, Web of Science although the composition of the purchases has changed (Figure 2). Figures for FE have only been collected since cycle three, and in cycle three most of the FE college sites were in the early stages of development. There is a growth in the number of links made to gateways (JISC and non-JISC services). The dip in some of the figures in cycle two is attributed to the different method of counting resources adopted from cycle two onwards: resources that are likely to be buried within subject trees may not be fully counted. Individual e-books were only available for counting reliably in cycle three. (Figures 1&2)

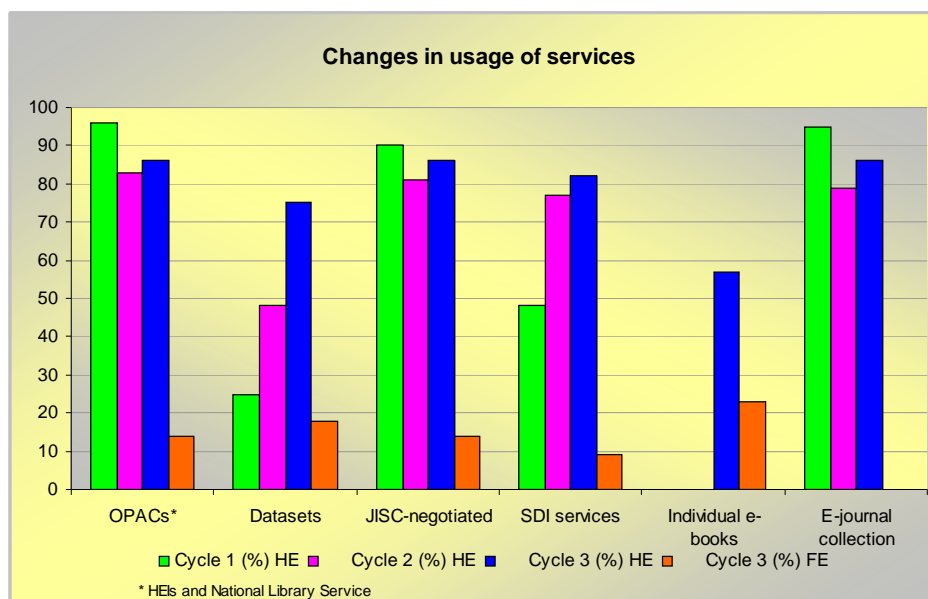


Fig. 1 Changes in percentage of Sites with Links

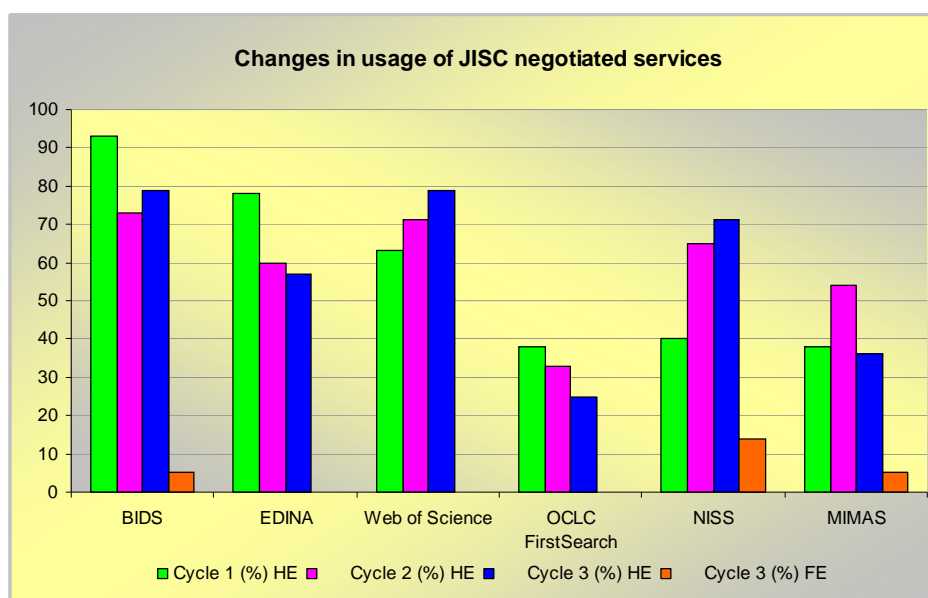


Figure 2 Changes in JISC negotiated service links

Access to electronic information services: the user perspective

The barriers include those of authentication procedures (and onsite/off site variations) and legal restrictions. Ideally authentication should be seamless, but at present, users have to learn to use different passwords for different resources. Search engines are easy to use, and often provide sufficient information for students. Other resources are compared to the default search engine (e.g. Science Direct is a 'journal search engine', MEDLINE is a 'medical search engine'). Resources which require a password have to be valued highly enough to be worth the effort.

Perceived benefits (and enablers) include:

- information push (rather than pull) services.
- availability of a wide variety of full text journal articles via some e-journal collections.
- specific training for database services.
- integration of EIS into the curriculum, and use of Virtual Learning Environments (VLE's)
- disciplinary emphasis on evidence-based approaches to decision making

Perceived barriers include:

- Support and incentives to encourage academic staff to learn how to use VLE's/MLE's in general (and EIS in particular).
- Organisational structures

Catering for off campus use, and the needs of the part-time and distance learning students

Some students are using HEI resources for non-academic reasons but if anything, the JUSTEIS and JUBILEE evidence suggests that the increasing demand is for access to EIS at home (Figure 3). Students in all three cycles responded that they were using EIS primarily for coursework purposes, particularly for preparing assignments. FE students, and part-time students are likely to depend on home resources – but what happens to those who do not have computers at home? Methods have changed over the cycles to try to capture the meaning of 'home-based' access to students, as this can be difficult to determine reliably.

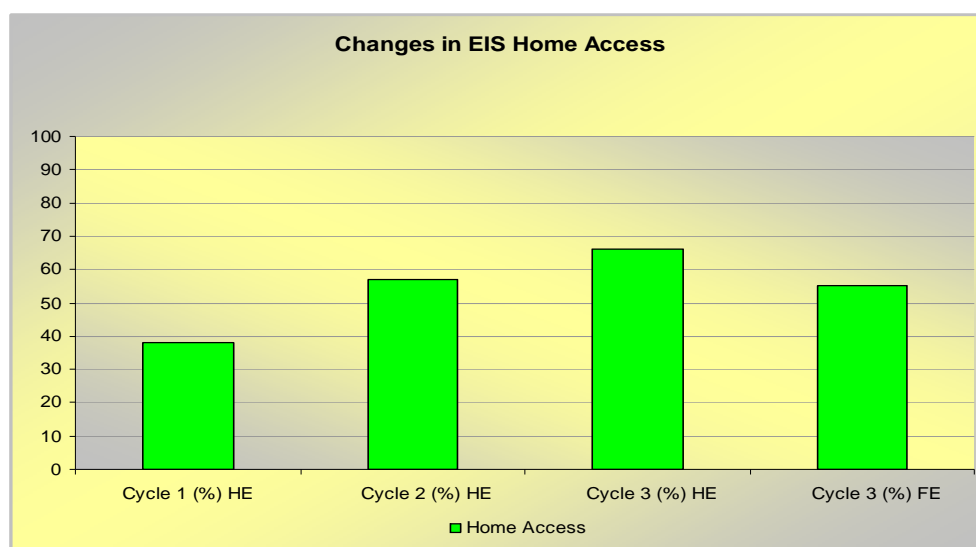


Fig. 3 Trends for EIS Home Access

FE college developments

In 2002 most FE colleges were starting to develop their services and access provision policies, procedures and evaluation mechanisms. Comments about the lack of specifically targeted EIS for FE are a factor and this, coupled with the lack of financial resources available, may account for the relatively slow uptake of specific services. FE purchasers face great problems in spending equitably on EIS for a student population that is far

broader than that of HE, both in terms of subject areas, and academic and vocational ability, and where the resourcing has traditionally been much poorer. Licensing conditions are sometimes a barrier, where FE staff teaching HE franchise students do not share the same access to HE resources that their students have.

E-mail and text messaging

Distinct changes in the ways students communicate have been noted from Cycle 1 to Cycle 3. Use of Web-based e-mail, mobile phone text messages and the proliferation of multiple email accounts has increased over and above at least one personal e-mail account as well as the university account. Institutional arrangements for e-mail vary considerably, and for further education students, text messaging is more likely to be the expected norm for receipt of messages. E-mail is popular in FE between peers but less so between teaching staff and students.

Other changes

Students are more reliant on EIS, and fewer could manage without such access (Figures 4& 5). There are some disciplinary differences, but the traditional 'book-based' arts and humanities disciplines are not very different from the scientists and social scientists in attitude now.

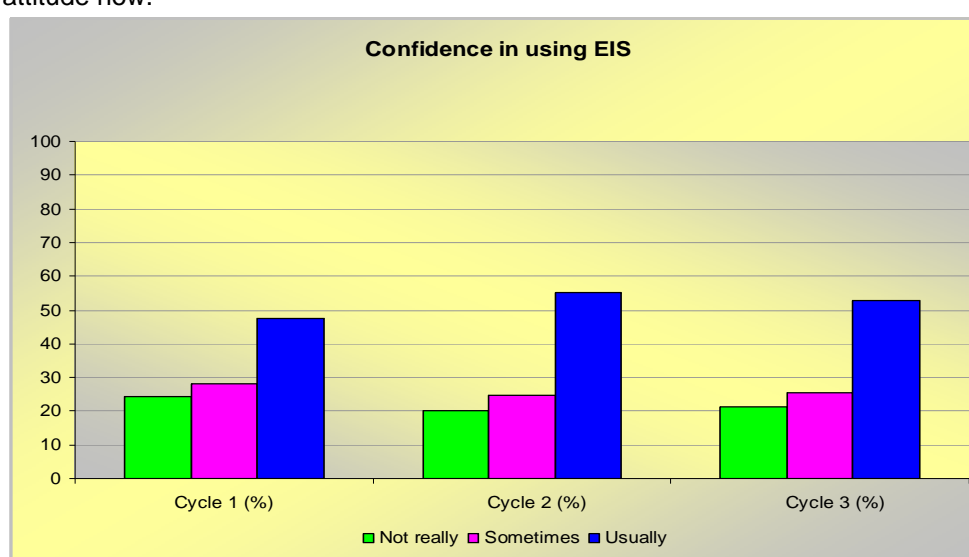


Fig. 4 Confidence in using EIS

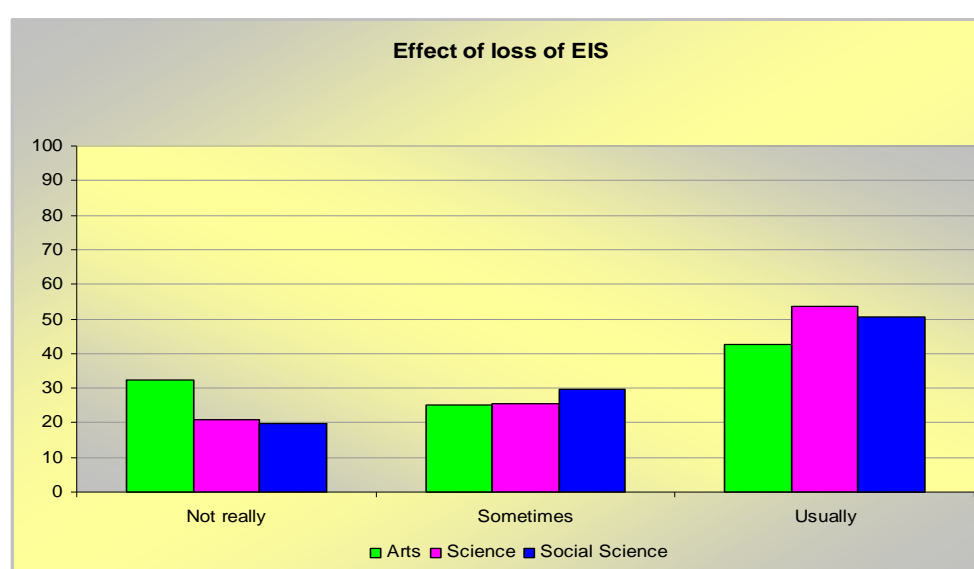


Fig. 5 Risk of loss of EIS

Appendix 1.3 Executive summary for JISC Committee for Content Services

Key messages

- Students use search engines, particularly Google, to find information. Other content services are judged by the search engine standard.
- The growing popularity of electronic journals is related to the ease of access to full-text information.
- Students are increasingly using search engines to locate information about, and from a variety of private, and public sector organisations.
- There are distinct disciplinary differences in the type of specialist electronic information services used, and these are not diminishing over time. There are gaps in provision of material suitable for the diverse needs of the FE market.
- In general, research postgraduates and academic staff are the groups most likely to use the specialist electronic resources — but not all members of these groups use resources which might help them in their work.
- Academic staff are the main influence on students' decisions to use particular electronic information sources (or not).

For content providers the implications are:

If content services must be different in appearance and 'feel' from routine search engine use, then students and staff will need training and support to use these specialised content services.

Question: *How different do specialised content services need to be (compared to the search engine)?*

Academic and tutorial staff are the key to greater take-up of content. The vast majority of libraries signal availability of services, but students will not use the services unless academic staff encourage students to use the services.

Question: *Should LTSNs do more to encourage staff development and awareness of content that is useful for undergraduates and postgraduates?*

Question: *Electronic journal usage is increasing (among some disciplines). Academic staff may use journals for current awareness – unlike students. If staff are the role model, how do they perform that role when their pattern of content use differs from students?*

Library and information service staff, with support from JISC services, need time to work closely with academic staff to discuss needs, and evaluate opportunities for integration of electronic information and learning resources into the curriculum. Selection of resources for Virtual Learning Environments should take into account the discipline, the particular learning needs and skills required and ways in which learning can be made interactive.

Question: *Should LIS staff be encouraged to work more on VLEs (to promote content) rather than devoting time to promotion of content via Library Web pages?.*

Views on content provision – the gap between expectations and reality

Gap analysis at some sites suggests that there is a problem of managing expectations. Library Web sites can, and do make content available (Figure 1), and LIS (Library and Information Service) staff and academic staff may think that students are retrieving appropriate information, but students may actually lack evaluative skills – something students may realise themselves as they learn through trial and error (Figure 2).

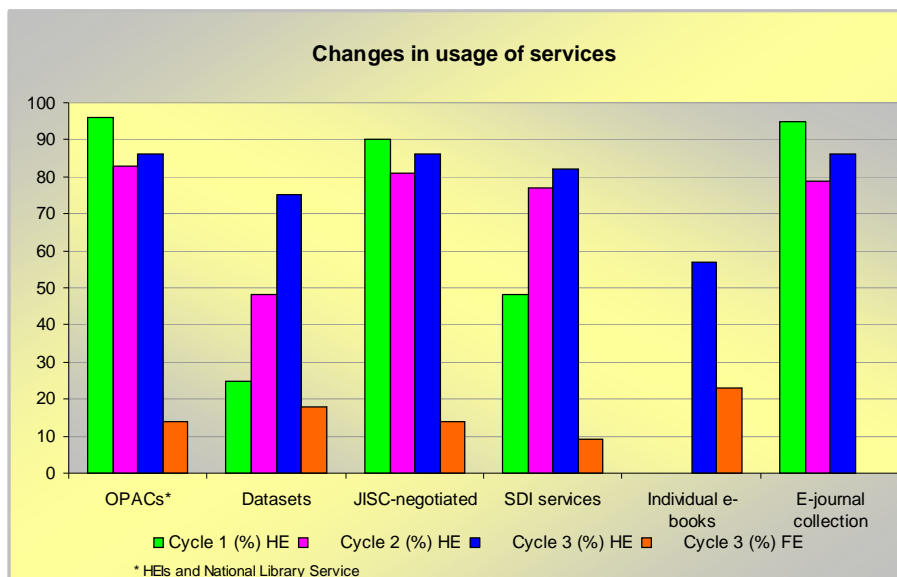


Fig. 1 Changes in percentage of Sites with Links

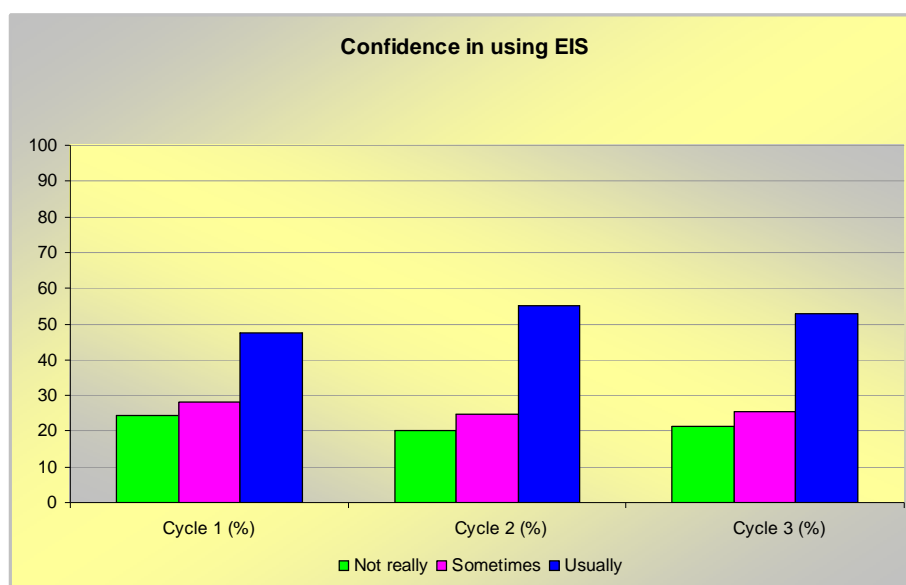


Figure 2 Confidence in the use of EIS

Search engine dependence

Search engines are consistently the most popular EIS for finding information in all three cycles (Figure 3). Students compare other EIS to the search engine model, describing MEDLINE as a 'medical search engine, for example. (JUSTEIS). Search engines are used as a means to an end, and organisational web pages were used, by all disciplines, in nearly one in four recent searches by undergraduates and one in five searches for FE college students (Figure 3).

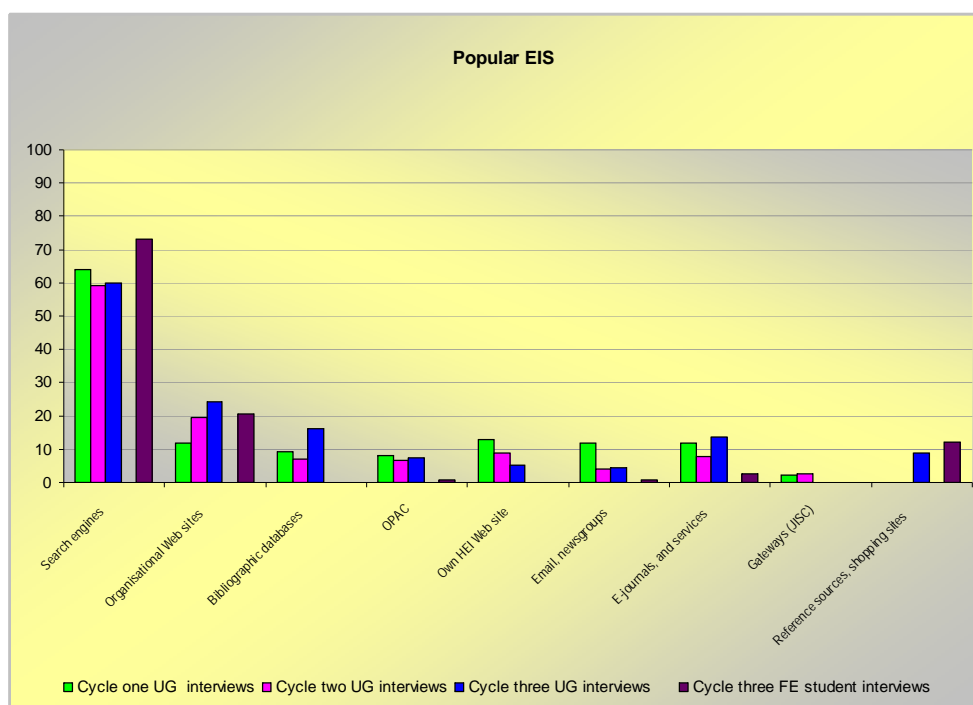


Fig. 3 Popular EIS

Searching strategies

Searching strategies are generally quite basic and FE students often expect to spend some time (hours rather than minutes) searching the Internet to find answers to their queries. The younger FE students are not necessarily more skilled than the more mature FE students, and Key Skills programmes may need to include more emphasis on effective Internet searching to help some FE students.

Use of subject gateways

Use of gateways such as SOSIG and OMNI was very low, across all three cycles. However, students find, or are directed to resources which are in effect gateways, and these resources are often used and appreciated. The unmet needs are perhaps most obvious in the new and burgeoning courses such as performing arts/media studies, and sports sciences, where the resources required cross conventional disciplinary boundaries

Books and e-books

Cycle three provided the first opportunity to track e-book usage. Textbooks (printed) are still popular with students (Figure 4), and many resort first to the textbook for a routine study problem. Future monitoring should help establish how e-books will be used, as separate items or as part of a module area within a VLE, for example. Generally, FE students do not use OPACs, preferring to browse the shelves in their subject area or asking the library staff.

Use of specialist collections

Undergraduates need to be directed to these, though some make habitual use of some specialist databases and e-journal collections by their final year. Academic staff are the main influence on students' use of EIS (or not), and the more specialist collections will need to be promoted through the appropriate VLE or via lecturers' own web pages. Postgraduates, particularly the research postgraduates, and academic staff may be the primary users of some specialist collections. There were instances of enthusiasm among research staff and students for some specialist web sites and resource collections which had been developed by subject experts in the field.

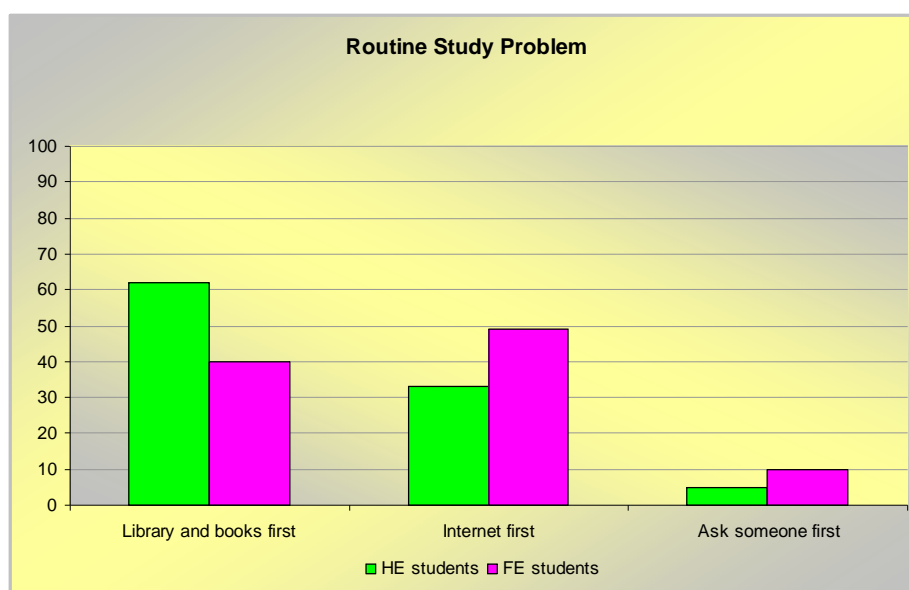


Fig.4 Routine Study Problem

Disciplinary differences are evident, with Humanities and Arts undergraduate students the least likely to use databases, compared to Pure and Applied Science, and Clinical Science undergraduate students who are most likely to use databases. For Humanities and Arts students EIS use is primarily associated with use of the OPAC (and therefore books) and search engines. (JUSTEIS). Unsurprisingly, perhaps, Humanities and Arts students may be confident as their searching is usually confined to the search engine and the OPAC (Figure 5).

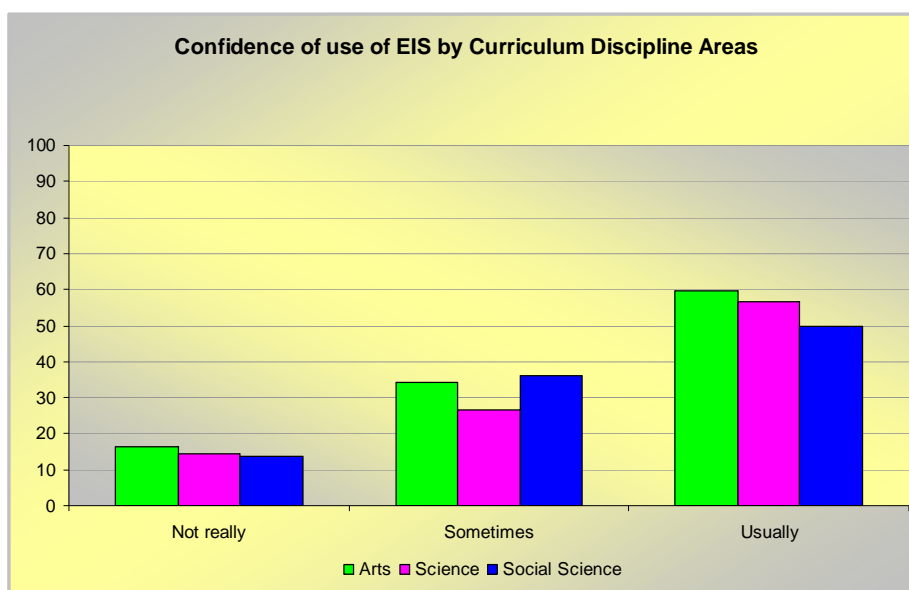


Fig. 5 Confidence in using EIS

Using the EIS Toolkit to assess the stage of development of use of EIS needs to take account of the intrinsic differences among disciplines, evident over the three cycles.

Use of e-journals and e-journal collections

In cycle one, around 12% of undergraduates interviewed had used electronic journals in a recent search they described. In cycle two, around 8% had used electronic journals. In cycle three there is an increase in use, largely among the clinical science students (Figure 6)

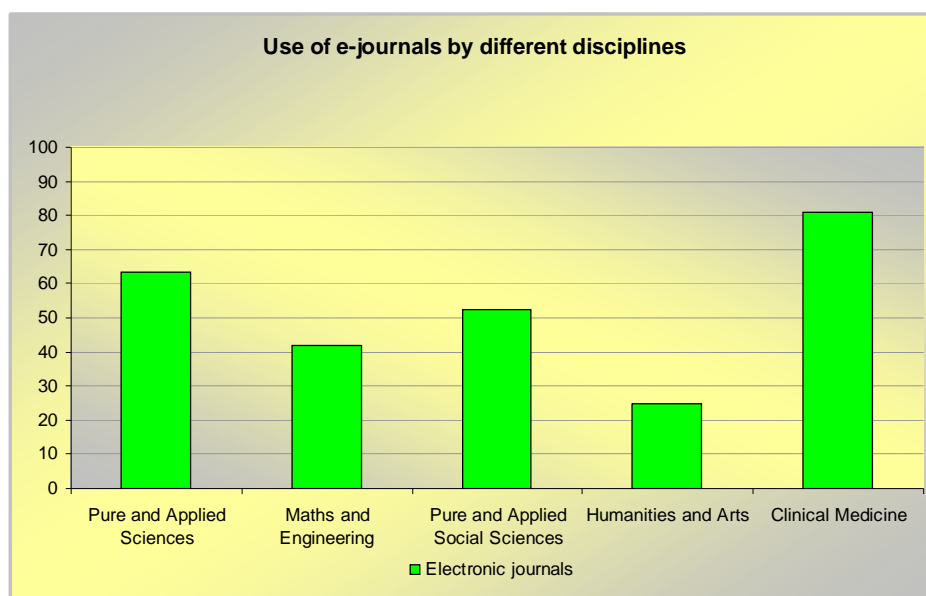


Fig.6 Regular use of e-journals by different disciplines

Trends

The main change is the growth of VLE usage. Students have adapted very quickly from using lecturers' web sites (not necessarily at their own institution) into using the VLE (Figure 7). Science students in particular appreciate interactive sites which provide solutions. VLEs provide similar question and answer services and students appear to like this support for formative assessment.

Students and staff use the Internet for pictures and images. Music downloading happens and is mentioned by some students.

FE students need more resources aimed at their needs – there was a gap in provision in the baseline study in cycle three. Licensing deals need to be more suited to FE needs.

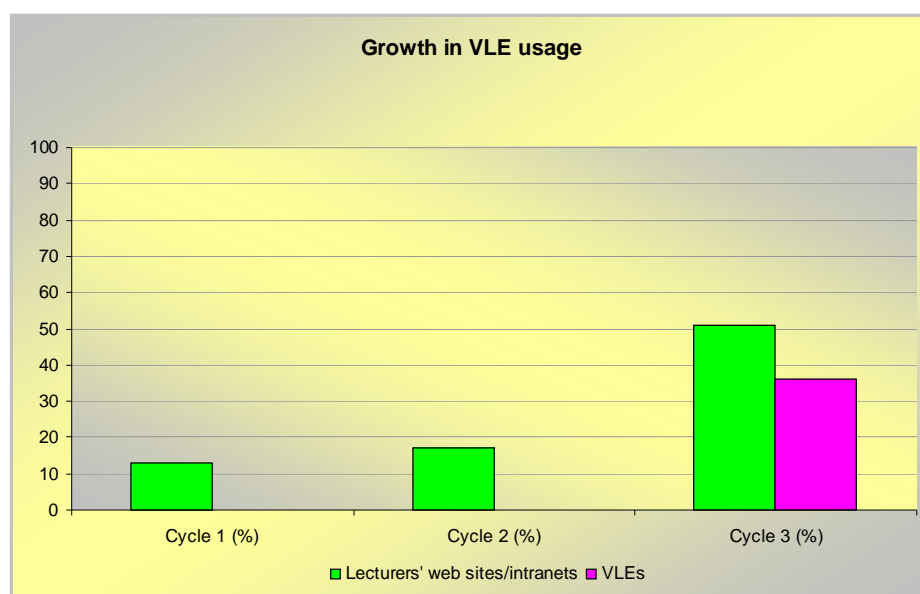


Fig. 7 Growth in VLE usage

Appendix 1.4 Executive summary for JISC Committee for Learning and Teaching

Key messages

- Virtual (and managed) learning environments (VLEs, MLEs) could, if implemented carefully, increase appropriate use of electronic information learning resources.
- In general, research postgraduates and academic staff are the groups most likely to use the specialist electronic resources — but not all members of these groups use resources which might help them in their work. HE and FE students may judge other content services by their search engine standard. Textbooks are still used by students for routine information searching in their studies. There are distinct disciplinary differences in the type of specialist electronic information services used
- Academic and tutorial staff are the main influence on students' decisions to use particular electronic information sources (or not). FE teaching staff often encourage and support student use of electronic information services in class sessions, unlike HE.
- Library and learning resource staff need a flexible approach to working with academic and teaching staff to support use of electronic information sources for learning.

The implications for those supporting learning and teaching are:

Academic staff need to be more aware of their key role in encouraging effective use of electronic information sources. HE and FE staff need to learn from each other on effective means of encouraging students in use of electronic information services.

Question: *Ferl provides a Web-based service to FE staff with (a few) example case studies of the effective use of ILT. How does, or could this relate to the LTSN model?*

Hierarchies of information literacy skills need to be re-assessed to ensure that these hierarchies reflect present student learning patterns and student experience of Internet use for routine lifestyle reasons.

Question: *Which information literacy or Key IT skills are generic 'study skills' and which are more cognitive and context-dependent (requiring subject specialist input)?*

Library and information service staff, with support from JISC services, need time to work closely with academic staff to discuss needs, and evaluate opportunities for integration of electronic information and learning resources into the curriculum. Selection of resources for Virtual Learning Environments should take into account the discipline, the particular learning needs and skills required and ways in which learning can be made interactive.

Question: *How are the differing responsibilities of 'learning support/LIS' staff and teaching staff best negotiated? Who provides the 'edutainment'? How is the investment in VLEs to be evaluated?*

Managing the development of ICT in further and higher education and research

The EIS toolkit (available as a Web-enabled prototype) at <http://www.northumbria.ac.uk/imri> may be used by managers to assess how well EIS are embedded into strategic and operational planning in a department or discipline in an institution. Five stages are characterised: baseline, change, congruence, embedding and full integration. Revisiting sites in Cycle Three after initial visits in Cycle One indicated that progress had been made. Change may be partial, with some aspects of EIS development and use in a department at one stage and others at the next level

One size does not fit all – there are disciplinary and institutional differences in the approach taken to ICT development and learning support. Three models of ILT support found among HE staff (Figure 1) are

Model 1 Follow my leader (*Sole IT enthusiast, other colleagues of a wide range of ability*)

Model 2 Free market – laissez faire (*Staff aware, little evidence of central direction*)

Model 3 Collective – team push (*Strategic integration of information skills into the curriculum*)

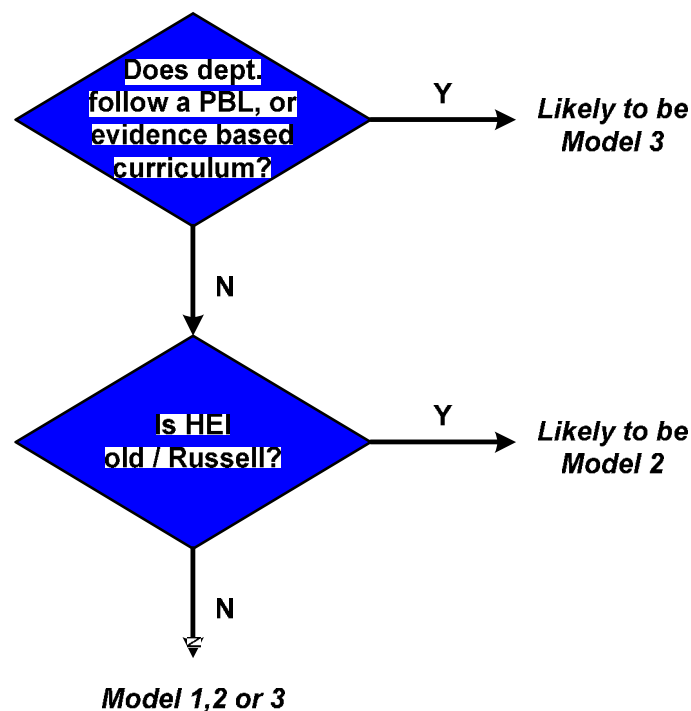


Figure 1 Organisational models of ILT support

The approach to VLE/MLE development varies, with a few institutions taking a strategic approach to e-learning. Even with high-level support for VLE development, some teething problems are common, and development still dependent on the innovative entrepreneurs in a department.

Embedding information skills in VLEs

A main change is the growth of VLE usage. Students have adapted very quickly from using lecturers' web sites (not necessarily at their own institution) into using the VLE (Figure 2)

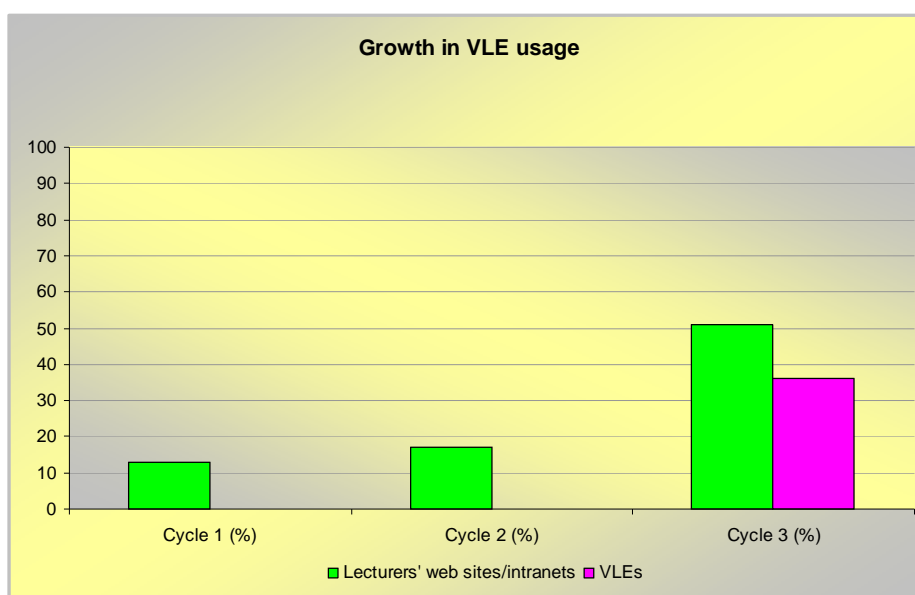


Fig.2 Growth in Intranet / VLE Usage

Science students in particular appreciate interactive sites which provide solutions, answers (put in the data collected, obtain the answer. VLEs provide similar question and answer services and students like this support for formative assessment. Textbooks are still used for answers to routine study queries (Figure 3) and how students might use these within, or in addition to the VLE is unclear.

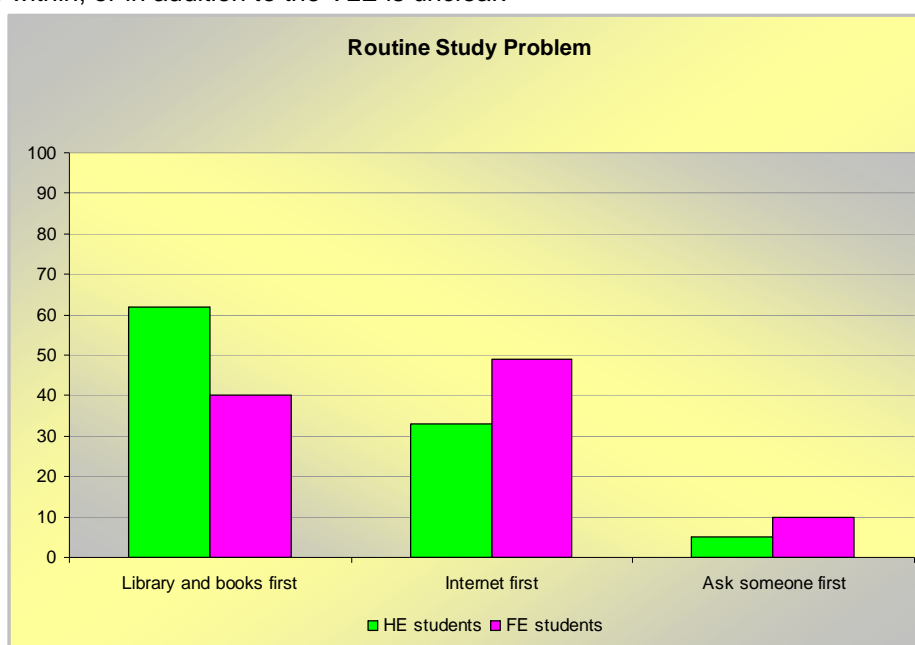


Fig. 3 Routine Study Problem

How might VLEs support better information skills? The claims and expectation of VLEs do not always match the practice on the ground. One of the observations of the Framework was that search engine dependence meant that students could successfully obtain material for assignments without practising some of the lower level skills (Figure 4). While plagiarism is more obvious if students stick to the resources in a VLE, they may 'compare and evaluate' information even less, unless this is presented as part of a learning exercise within the VLE. However, Internet searching strategies are generally quite basic and FE students often expect to spend some time (hours rather than minutes) searching

the Internet to find answers to their queries. The younger FE students are not necessarily more skilled than the more mature FE students, and Key Skills programmes may need to include more emphasis on effective Internet searching to help some FE students.

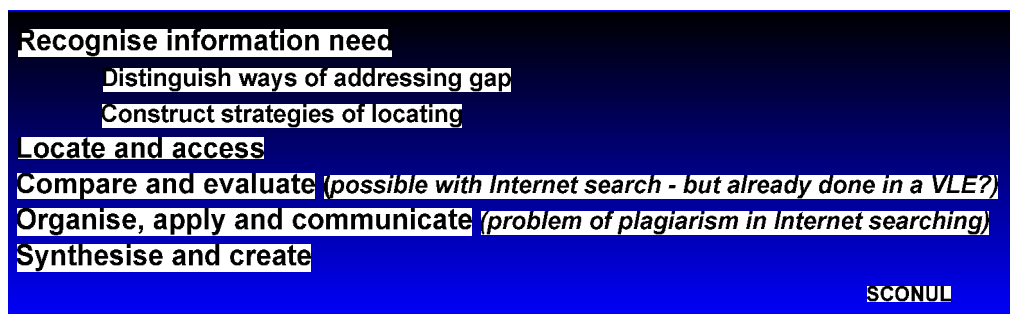


Figure 4 Information skills hierarchy (SCONUL) – for search engine searching

One area that must be considered is the progression from FE content and skills through undergraduate content and skills to postgraduate content and skills. Some information skills may be context-sensitive, others are not, but the boundaries may be discipline-specific.

Implications for staff development

Academic staff are key to the effective use of EIS by students (Figure 5). For postgraduates, library/IT courses rank more highly than peer influences.

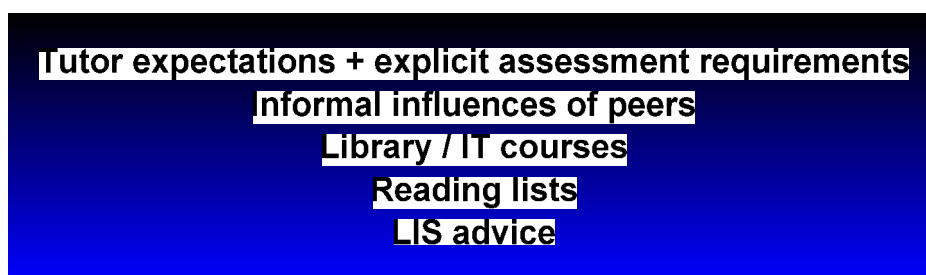


Figure 5 Influences on use of EIS by undergraduate students

Evidence from the framework suggests that in some disciplines staff are aware of their role in helping students to evaluate EIS – and view this as a huge problem. Informal staff development and support from the LIS staff may comprise:

- awareness raising
- advice on comparative benefits of various EIS
- collaboration on purchasing EIS
- provision of information skills training (particularly in the sciences)
- informal support

The greater class contact time allows some FE College staff to integrate use of EIS into class sessions more easily than might be the case in Higher Education. This 'guided learning' seems effective and students enjoy sharing the learning with their peers, and their teachers. For FE students this peer support is most important, followed by 'learning by surfing'. Problems are often experienced because many classes do not have appropriate technology and where IT isn't available many respondents noted that it was too time consuming to take students to other rooms for a 10 minute session on the computer.

LIS staff have to be very flexible in EIS skill support, adopting contingent approaches depending on the situation and the discipline. As one senior librarian suggested in Cycle Three:

'We encourage and I have to say the key teaching staff are taking us up on this, we encourage the teaching staff to book sessions within their teaching time. There are three ways that that can be done...

...There's still quite a lot who send them off, they just tell the students they've got an hour and a half or an hour in the LRC and....they don't liaise with us at all about what they want us to do with the students. The students come, they don't actually know why they're there, they just know that the session in the History block on that Friday is with the LRC. Very, very frustrating....

...Um, the second one is they talk to liaison in advance and suggest topics to search for etc. but don't come to the session. That's not too bad....

...But the third one and it's the one we're trying to get new teaching staff to do, is they talk to us in advance so that the workbooks that the students goes away with and that we use in the session are tailored for that particular module but also the member of staff stays...

...and we actually want to take that one step further, it's happened once, which is where the teaching staff has actually held the session and has asked a member of IMS to support and we don't think that's a step back, we think that's wonderful.' (Cycle 3, JUSTEIS)

MLEs, VLEs and information systems in higher and further education – future scenarios?

IF the IDEAL is:

- vision of the educational institution as a 'knowledge community' (Figure 6) with policies for knowledge products (learning and research) to ensure proper dissemination and use within and without the institution
- Strategic support from the centre to ensure that:
- National agencies to support teaching and learning and/o research to provide:
- Professional bodies to provide
- Students to have:

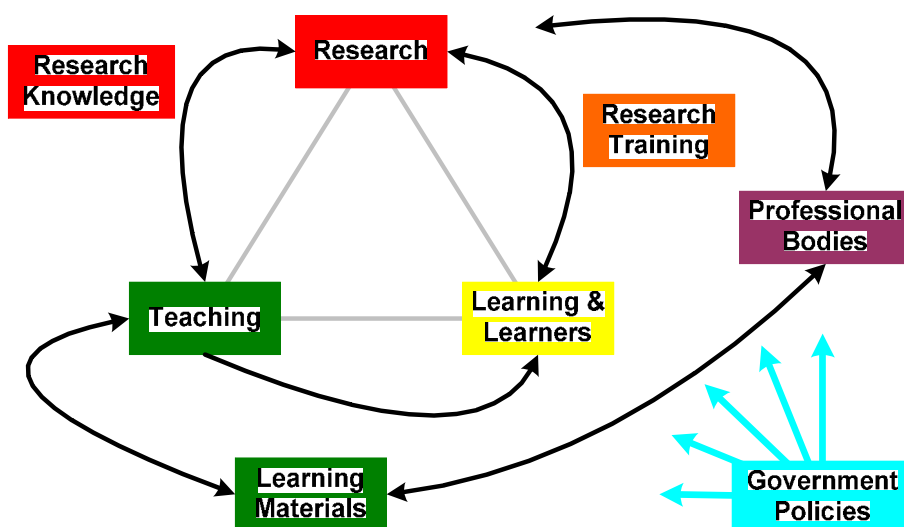


Fig. 6 Knowledge Production

WHERE are the GAPS – and what evidence is there from cases of good practice that there are solutions?

Identified gap by M&E framework	Possible solution	Responsibility of
Different approaches to teaching and learning in FE and HE for support of EIS	Need HE / FE staff development agencies to share good practice Development of JUBILEE toolkit to cover specific disciplinary needs	Ferl, LTSN, NLN
Little specific support for new teaching staff in EIS	Development of probationary packs	HESDA?
Academic staff unwilling to commit time to VLE development – personal benefits unclear, combined with unwillingness to share teaching materials?	VLE needs to provide administrative benefits for staff VLE needs to fit in with learning patterns for their discipline Rewards for sharing learning materials Middleware projects (e.g. ANGEL)	Institutions LTSNs (Professional bodies) e-university model?
Lack of institutional response to move from PC + email to mobile technologies	Watching brief (fluid situation with Microsoft vs. Nokia)	JCN/UKERNA?
Arts and Humanities students less well supported in ICT-focused research training	Adapt existing training guidelines	Research councils

Appendix 1.5 Executive summary for JISC Committee for Networking

Key messages

- Students increasingly require off-campus access to their institution's electronic information services and resources. Barriers include problems with passwords, IP addresses and licensing restrictions.
- Text messaging is the preferred mode of electronic communication for many students.
- The main players in promoting effective (and greater) use of the national network by students, up to the undergraduate level at least, are academic and teaching staff. If staff do not encourage students to use electronic information resources and services, then students are unlikely to use these resources systematically of their own accord.
- VLE's are popular with FE and HE students, who enjoy the interactive learning features as well as the one-stop shop to resources. Development of VLE's may promote use of the more specialist electronic information services.
- There are distinct disciplinary differences in the type of specialist electronic information services used, and these are not diminishing over time. There were gaps in provision of material suitable for the diverse needs of the FE market.

The main implications for those developing the network are:

Catering for an increasing proportion of part-time students requires that off-campus access to services should appear as easy as on-campus access. Government policies for widening participation mean that more students may be part-time students, mature learners, remote or distance learners.

Question: *What services or level of support should be provided to enable the socially excluded, without access to home computing and ISP facilities, to have equitable, but also secure access to learning resources?*

The personal communication device favoured by students is based on the mobile phone and institutions which previously relied on e-mail communication (staff to student), need to develop policies for text messaging (Web-based) and similar mobile phone-based services.

Question: *Should all students be made responsible for keeping their contact details up to date on a registration site? (given the problems of multiple emails, lost mobile phones...)*

Demands for interactive and multimedia content are likely to increase with the development of VLE's.

Question: *Are there subject disciplines which will make heavy demands for this content?*

Access to electronic information services: the user perspective

The barriers include those of authentication procedures (and onsite/off site variations) and legal restrictions. Ideally authentication should be seamless, but at present, users have to learn to use different passwords for different resources. Search engines are easy to use, and often provide sufficient information for students. Other resources are compared to the default search engine (e.g. Science Direct is a 'journal search engine', MEDLINE is a 'medical search engine'). Resources which require a password have to be valued highly enough to be worth the effort.

Perceived benefits (and enablers) include:

- information push (rather than pull) services.
- availability of a wide variety of full text journal articles via some e-journal collections.
- specific training for database services.
- integration of EIS into the curriculum, and use of Virtual Learning Environments (VLE's)
- disciplinary emphasis on evidence-based approaches to decision making
- professional and vocational requirements, QAA recommendations

Perceived barriers include:

- Lack of support and incentives to encourage academic staff to learn how to use VLE's/MLE's in general (and EIS in particular)
- Organisational structures can mitigate against further development of EIS use

Catering for off campus use, and the needs of the part-time and distance learning students

Some students are using HEI resources for non-academic reasons but if anything, the JUSTEIS and JUBILEE evidence suggests that the increasing demand is for access to EIS at home (Figure 1). Students in all three cycles responded that they were using EIS primarily for coursework purposes, particularly for preparing assignments. FE students, and part-time students are likely to depend on home resources – but what happens to those who do not have computers at home? Methods have changed over the cycles to try to capture the meaning of 'home-based' access to students, as this can be difficult to determine reliably.

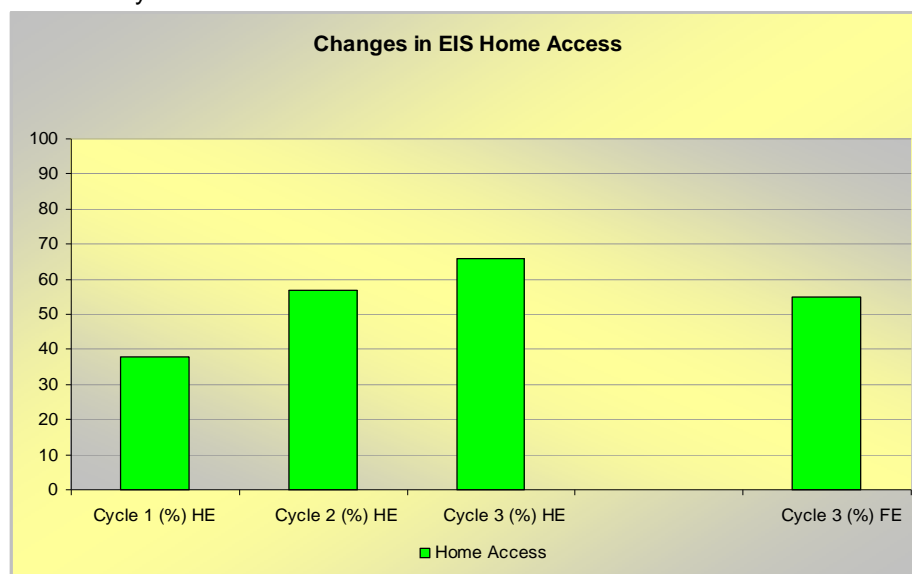


Fig. 1 Changes in access to EIS from home

FE college developments

In 2002 most FE colleges were starting to develop their services and access provision policies, procedures and evaluation mechanisms. Comments about the lack of specifically targeted EIS for FE are a factor and this, coupled with the lack of financial resources

available, may account for the relatively slow uptake of specific services. FE purchasers face great problems in spending equitably on EIS for a student population that is far broader than that of HE, both in terms of subject areas, and academic and vocational ability, and where the resourcing has traditionally been much poorer. Licensing conditions are sometimes a barrier, where FE staff teaching HE franchise students do not share the same access to HE resources that their students have.

E-mail and text messaging

Distinct changes in the ways students communicate have been noted from Cycle 1 to Cycle 3. Use of Web-based e-mail, mobile phone text messages and the proliferation of multiple email accounts has increased over and above at least one personal e-mail account as well as the university account. Institutional arrangements for e-mail vary considerably, and for further education students, text messaging is more likely to be the expected norm for receipt of messages. E-mail is popular in FE between peers but less so between teaching staff and students.

Use of specialist collections

Undergraduates need to be directed to these, though some make habitual use of some specialist databases and e-journal collections by their final year. Postgraduates, particularly the research postgraduates, and academic staff may be the primary users of some specialist collections. There were instances of enthusiasm among research staff and students for some specialist web sites and resource collections which had been developed by subject experts in the field.

Disciplinary differences are evident in the type of EIS popular (Figure 2). Using the EIS Toolkit to assess the stage of development of use of EIS needs to take account of the intrinsic differences among disciplines, evident over the three cycles.

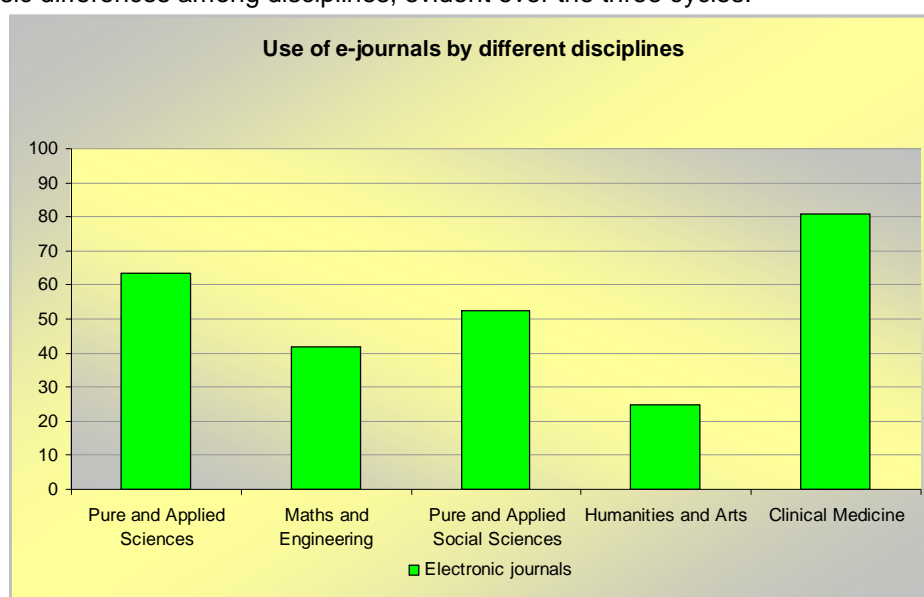


Fig.2 Regular use of e-journals by different disciplines

New types of content

Students and staff use the Internet for pictures and images, but there is no apparent increase in this usage (possibly as it forms a relatively small proportion of usage). Music downloading happens and is mentioned by some students.

Science students in particular appreciate interactive sites which provide solutions, answers (put in the data collected, obtain the answer. VLEs provide similar question and answer services and FE and HE students like this support for formative assessment.

Appendix 1.6 Executive summary for JISC Committee for the Support of Research

Key messages

- There are distinct disciplinary differences in the type of specialist electronic information services used, and these are not diminishing over time.
- In general, research postgraduates and academic staff are the groups most likely to use the specialist electronic resources — but not all members of these groups use resources which might help them in their work.
- Academic staff are the main influence on students' decisions to use particular electronic information sources (or not).
- Research council training guidelines have an impact on research student skills in use of electronic information sources and services (such as specialist software).
- The information skills of postgraduates entering research training should not be assumed to be better than those of undergraduates in general.
- Research postgraduates are the group of students most likely to be using discussion groups for academic purposes.
- Library managers are not fully aware of the implications of new publishing models for their planning and budgeting.

For those supporting research the implications are:

Disciplines in which there are minimal training guidelines for research postgraduates could use existing models to help supervisors and students make effective use of available resources and services.

Question: *How can staff development agencies best support the implementation of research training guidelines which require more focus on information skills?*

Research students need support and advice on the legal and ethical issues of participation in discussion groups, and publication of information on the Internet.

Question: *Postgraduates may be informed during research training – but should staff development do more to inform the supervisors?*

There seems little 'joined-up' awareness of the implications of new publishing models for the funding of research dissemination.

Question: *If there is a move towards open access models, and these are taken up by research intensive institutions – how will that affect the provision and uptake of national deals for licensing, for example?*

Diverse needs of the research community

Interviews over the three cycles with postgraduate research students and academic staff illustrate the need for the highly specialist pockets of researchers to be able to link up with each other to share and develop resources and tools. However, at some stage, data might need to be made available for teaching purposes to undergraduates.

Nearly half the postgraduates (13/32) interviewed in JUSTEIS cycle three (2001/2002) regularly used electronic discussion groups (or mailing lists). Some are entrepreneurial in use of the Internet for publishing their work.

'My business, we have a Web site as well, and we find we get a lot of our work through the Web site...also we publish our work ...archaeology in general are using...quite a lot... publishing reports and things on the Internet...it's a quick and easy way to get the stuff out there.' (PhD student, cycle three JUSTEIS)

Science and engineering students may receive training in dealing with intellectual property such as patents, but awareness of intellectual property concerns and Internet publishing affects all research students.

Information push services such as ZETOC are appreciated and could be promoted more to academic staff and research students.

'I've also been placed on alert systems which I've no idea about and wish I did...so that the computer tells me when something comes out instead of me having to search for it. That's something I'm really grateful for.' (academic staff, cycle three JUSTEIS)

Provision of electronic information services

Over the three cycles, the growth areas are in the take-up of SDI services (attributable to ZETOC), and datasets, which are also used by some FE colleges. There has been little change in the number of HE sites linking to the OPACs of other institutions (Figure 1), nor in the overall take-up of JISC negotiated services such as BIDS, Web of Science, although the composition of the purchases has changed (Figure 2). Figures for FE have only been collected since cycle three, and in cycle three most of the FE college sites were in the early stages of development. There is a growth in the number of links made to gateways (JISC and non-JISC services). The dip in some of the figures in cycle two is attributed to the different method of counting resources adopted from cycle two onwards: resources that are likely to be buried within subject trees may not be fully counted. Individual e-books were only available for counting reliably in cycle three. (Figures 1&2)

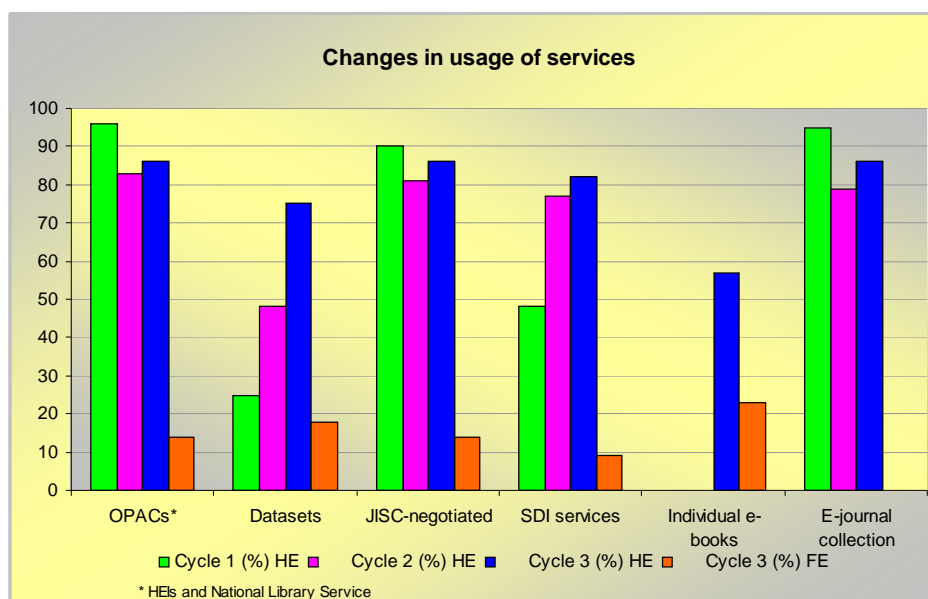


Fig. 1 Percentage of LIS Web Sites with Links

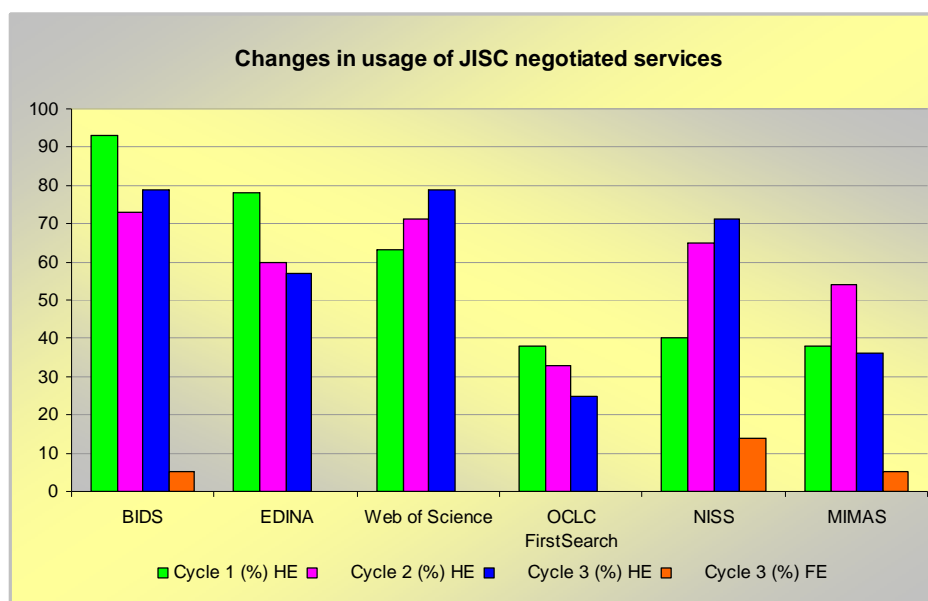


Fig. 2 Changes in JISC negotiated service links

Access to electronic information services: the user perspective

The barriers include those of authentication procedures (and onsite/off site variations) and legal restrictions. Ideally authentication should be seamless, but at present, users have to learn to use different passwords for different resources. Search engines are easy to use, and often provide sufficient information for undergraduate and FE students. Other resources are compared to the default search engine (e.g. Science Direct is a 'journal search engine', MEDLINE is a 'medical search engine'). Resources which require a password have to be valued highly enough to be worth the effort.

Perceived benefits (and enablers) include:

- information push (rather than pull) services.
- availability of a wide variety of full text journal articles via some e-journal collections.
- specific training for database services.
- integration of EIS into the curriculum, and use of Virtual Learning Environments (VLE's)
- disciplinary emphasis on evidence-based approaches to decision making
- specific research training guidelines from Research Councils

Perceived barriers include:

- Support and incentives to encourage academic staff to learn how to use VLE's/MLE's in general (and EIS in particular).
- Organisational structures which do not encourage innovation and learning in use of EIS

There is a concern about skill deficits in the future: undergraduates proceeding to postgraduate research studies may need to upgrade their searching skills and knowledge more than they do at present. Not all PhD students mentioned central support but there are examples of good practice where support in using specific software packages is available, and students are encouraged to ask for advice. The Humanities and Arts students among the JUSTEIS interviewees were the least well supported in training

The knowledge cycle

Few library managers, and possibly few senior staff in the institutions, appear to have grasped that they need to consider more carefully the management of knowledge within their institutions. For library managers this may mean working with new user communities, recognising staff more as publishers rather than just as consumers of information. In research-intensive institutions policies need to consider the connections between research knowledge creation, dissemination and use. In teaching-oriented institutions, ownership (and sharing) of teaching materials needs to be addressed. Interviews with senior library managers in HE indicated a lack of awareness of new publishing models such as the open access model, and the implications for knowledge creation, dissemination and use within their institutions. (Figure 3)

There has been little shift in the main concerns of library and information services managers over purchasing intentions. Resource constraints aggravate the problem of inflexibility of some deals in allowing individual institutions to tailor to local needs and demands.

A major organisational change problem is that of LIS staff training and upgrading of skills to accommodate different services and patterns of user support for the changes in learning and research support – often resolved in an ad hoc manner by using part-time and temporary posts.

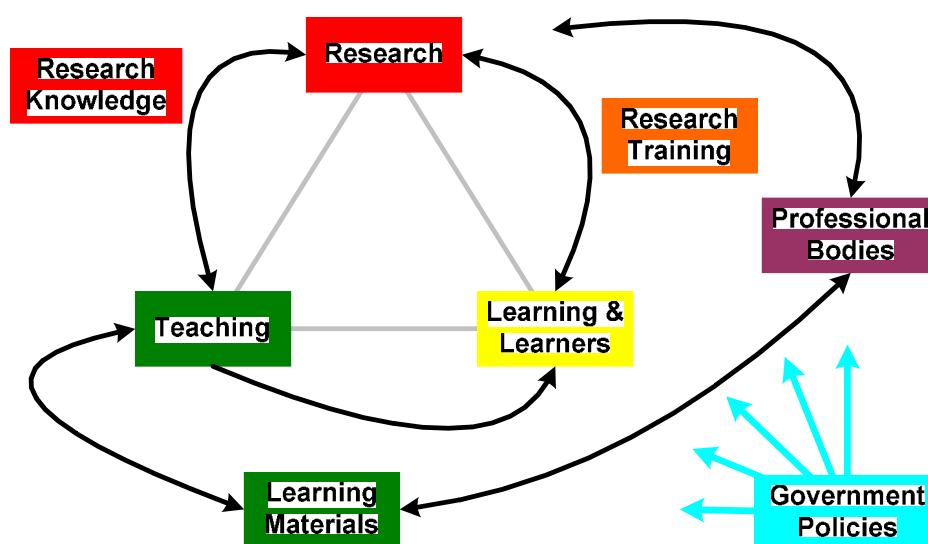


Fig. 3 Knowledge Production

Future scenarios

Given the scale of the proposed developments in the Research Grid, it would be useful to monitor the uptake of the services, and whether, for example, the virtual communities (and authorisation models) are working as intended.

If some of these initiatives proceed quickly, there are implications for user training and support, and how that will trickle down into research training programmes. Some communities will wish to start training students for research at the undergraduate level – how will the Research Grid relate to developments such as VLEs and MLEs?

Appendix 1.7 JUSTEIS Highlights Cycle Four (2002/2003)

April 2003

(NB format has changed from original document)

VLEs – the problem plateau

In Further Education in particular, the demand for secure VLE (Virtual Learning Environment) access from home may be increasing rapidly. In some colleges visited this year, the increased pressures on staff mean that timetabling for students is more concentrated. Their teaching is crammed into fewer days, leaving even full time students with less time for using the library.

This year we detect a 'problem plateau' with use of VLEs. There is no problem in duplicating the role of the departmental (or academic's) home page, with provision of access to resources. But few VLEs seem to be used beyond that level, and few staff seem to be exploiting the full potential of VLEs for interactive learning. Teaching staff will need extra support to ensure that such resources are used cost-effectively. Unsurprisingly, the investment in time in formulating good multiple choice questions for formative (or summative) assessment seems to deter many staff. Some LTSNs (Learning and Teaching Support Networks) are developing question banks and this pooling of effort should be encouraged.

Information skills training could be exploited more in VLEs. For example, students could be asked to critically appraise several resources on the VLE. Mostly, the VLE is being used as a resource dump.

RSCs need to reach the parts others do not reach?

Our impression is that the level of activity varies. At some sites, RSCs are clearly well known and the colleges are working well with their RSC. In others, the college library staff may be aware of the RSC but there has been little, if any contact. RSCs need to be aware that those who do not shout may be among those most in need of support.

Franchising and licensing

This is still a sensitive area. HE students in FE may have limited access to electronic resources licensed by their home HEI, with the result that FE tutors fall back on established practice, using resources that their Department pays for. Perhaps RSCs need to be more pro-active in demonstrating the benefits of a more coherent approach to resource provision.

Key skills – but no master key?

There are some paradoxes emerging on key skills:

Key skills may need to be integrated into the curriculum to make them appear relevant to the student

BUT

teachers interpret the key skills in different ways, and so the purported 'national standard' disappears rapidly.

Students may view 'advanced Internet searching skills' as something they do only when they are looking for several things at one time. Students may be learning more advanced Internet searching skills

BUT

these do not always transfer to practice.

Internet pick-and-mix

Some FE staff report that they must 'pick and mix' through Internet resources, as appropriate hardcopy resources are just not available in their subject areas (e-business, public services, practical archaeology).

Other cultures, other views

Other teachers report problems in finding resources for the black culture, and suitable resources by, and for ethnic minorities.

Collaboration between the library and academic staff

LIS staff found a JISC course on 'linking with academic staff' very helpful.

Library subject trees – dense and shady?

Subject trees are, as last year, complex, and seem difficult to use.

Appendix 1.8 JUSTEIS workshop for dissemination day

JOINT WORKING

What are the most effective ways for LIS staff to work with teaching staff to ensure students use EIS effectively for learning?

Extracts from JUSTEIS interviews: 'points to ponder'

From a librarian in HE:

'We encourage and I have to say the key teaching staff are taking us up on this, we encourage the teaching staff to book sessions within their teaching time. There are three ways that that can be done....

...there's still quite a lot who send them off, they just tell the students they've got an hour and a half or an hour in the LRC and....they don't liaise with us at all about what they want us to do with the students. The students come, they don't actually know why they're there, they just know that the session in the History block on that Friday is with the LRC. Very, very frustrating....

...Um, the second one is they talk to liaison in advance and suggest topics to search for etc. but don't come to the session. That's not too bad....

...But the third one and it's the one we're trying to get new teaching staff to do, is they talk to us in advance so that the workbooks that the students goes away with and that we use in the session are tailored for that particular module but also the member of staff stays...

...and we actually want to take that one step further, it's happened once, which is where the teaching staff has actually held the session and has asked a member of [staff] to support and we don't think that's a step back, we think that's wonderful.' [82401, from text units 99-147]

From a librarian in FE:

'Here is a central team of ILT champions. They are support-staff and are not specifically allocated to individual departments... They did start to work on a central library Website but staff preferred to stick to the department-based route. This did put together a central collection of resources last year but the students didn't use it. In any case the librarian feels that the HND staff are more competent to collate resources for their own subjects. The role of the library therefore tends to be one of supporting the staff. The old system used to be one of 'student files'. The ILT champions are working at moving the information out of these 'files' into a new format...The library site no longer contains the list of resources it is focused on more general information about the library with photos of the staff, etc. [102401 from text units 38-62]

From an FE lecturer:

'Periodically they have training events for lots of things like interact whiteboard and internet and computer skills but most of the time it's when you're in class. [80302, text units 106-108]

From HE lecturers:

'In the afternoon in the course of writing some lecture notes I couldn't remember...if anybody has published a running total of the number of Black deaths in custody since whenever...so I phoned the librarian who is now a friend and she said "Oh that's on our website", so duly crushed I said "All right"...I saved the table in Word...then produced some bar charts for use in my lecture' [58302, text units 129-137]

We have a subject librarian and they [students] would be able to go and see her with a particular enquiry...so it's very much on an individual basis. I was astounded how much (name) puts into actually helping students. I can say 'I can send them as a group' but she says 'Oh no I can deal with them if they come'. So any time basically she's always there to help and in sessions, they run lunch time sessions...subject specific ones. [113301]

From an FE student:

'Last Friday I had a lesson and we had like an activity - this was to help us with our assignment – because the Open Access Room is right next to the library it was to help us with the library and the Open Access Room, which is all computers, and what we had to do was, we had to find out things on animal behaviour, because that's our essay, and we went onto Google on the Internet and we found out some things about sharks, going through biology and all that.' [98101, text units 5-12]

From an HE student:

'[Interviewer: How much information skills and information retrieval training have you had?]....Academic institutions? Nothing that they could teach me. My mother taught me from the age of eleven how to use PCs and stuff. All of our lecturers put articles and internet links that we can get on-line and its all on a managed learning environment and it's a so called Blackboard, an on-line system for medical sciences I think biological sciences use it as well but we're all really good....All of [name] lectures are done using the LCD projector mainly all of his stuff is organized on there I am on the IT efficient services consultant committee... For the dissertations they [Information Services] have just e-mailed out two sessions that they are going to go through on inserting graphics and graphs and stuff into word documents and stuff, you just e-mail them back to book your place. All the careers advisory service are on e-mail and on-line for all that as well.' [52102, from text units 132-141, 150-153]

From an HE lecturer:

'[Interviewer: Do you know if training is available for the students?]....I have no idea. That is all dealt with by the library, everything about how you access and how you research...I don't know whether we do any in-house training in the final year, because most students don't actually do any sort of searching of the academic literature until they get to their final year and even then some manage to write their projects just referring to books. Our final year project tutor does run some sessions related to projects, but whether, I think he might do that actually on literature searching for the project...whether the students go to it is another thing...we do tend to rely on the library to provided that sort of training because that is their expertise and we do have a very good librarian.' [103301, from text units 235-247]

TASK: Using the scenarios provided, plus your own experience

- List around three approaches that seem to be effective, then
- Rate the approaches, using the following questions as a guide.

Questions for the group to answer:

- Does this help teaching staff (and how)?
- Does this help LIS staff (and how)?
- Is this likely to fit in with the institutional learning and teaching strategy, and the wider HE and FE political agenda?
- What training and support do teaching staff need if this approach is to be effective?
- What training and support do LIS staff need if this approach is to be effective?
- How would you monitor whether this approach was effective?
- Comparing the approaches, is there one 'general winner', or do you think the approach needs to be tailored to different teaching styles, or disciplines?

2 LIBRARY AND INFORMATION SERVICES INDUCTION

What is the most effective way of ensuring induction meets the needs of students and staff?

Extracts from JUSTEIS interviews: 'points to ponder':

From FE students:

'All I know with the library induction, we went it and sat down and they had an overhead projector and they showed us a lot of ways really to find books in the library and the different sections. That's all really' [75116, text units 72-75]

'But when you first start... right at the very start of this course we were taken into the library by the librarians and said this is available and if you ever want help ask for it but because most of us were experienced we said we don't need it let's just get on with it.' [110109]

'The boss of the library told us bits and bobs but nothing major...and he gave us information and passwords and that' [81101, from text units 212-218]

'We were taught when we first started on using the facilities and things, which were quite useful because I hadn't used the Internet in a while. The staff in the library were really friendly and helpful' [81104, text units 112-115]

'Yes, we did actually at the start of this course, go down and have a lesson but...I felt for me it was good to hear someone else say but it was stuff I already knew and have done. Just because when I was younger, GCSE's, I mean just everyone did, so I just sort of learned my way around. It was good the lesson we got taught, but it wasn't...I've never really been taught how, I find it quite simple' [102102, text units 123-128]

From HE students:

'There is a Psych net that I haven't actually used at all that got accounted by some of the lecturers...but loads of students...to be honest a lot of leaflets are given out in the first month of joining the university and the reality is you file them away, some people throw them in the bin.' [86109, from text units 231-238]

'They did first year core skills course for chemists and that's what it was about basically. Going through the library, how to use journals, like how to find things on internet it was basically everything you need to know.. A core module. Basic chemistry texts and stuff... given by tutors on the course. And then we had a topics session this year. The librarian took us and showed us how to use all the resources, order books, inter-library loans and that sort of thing.' [60105, from text units 74-81]

'Um, we did have, we did have something in the first year, I can't even remember what it was. It was very early in the morning, that's what I can remember. And it was about computers and that kind of thing. It was 9 o'clock and I went with no make-up on and it was a horrendous day' [100101, text units 169-173]

'We had a lot of training. The first week we came we had an essential tour of the library and told about the library and we had questions to answer. That was meant to be put into our professional skills which was another module we had to so it was important that we complete that. Going through the essential tour it was in-depth research you had to use the OPAC for, and, you know, the journals and everything and going to certain locations. It was really helpful' [104107, text units 129-135]

'They are quite good at the beginning of the each year, they give us a library session, I must admit that not many people make use of them, The two that I've been to they've gone into the same things. Generally at the beginning of the year isn't when you want to know about it, it needs to be done this time of the year, when we are all researching.' [74107, text units 146-150]

From an HE lecturer:

'We have a compulsory 1st year IT course which covers word processing (including production of a CV and subsequent interaction with the Careers Centre), spreadsheets, elementary GIS and Information Retrieval skills. The latter includes use of the web, web searching, Web of Science journal article searching and the (institution name) CDROM information system. In the past we have assessed their ability to use the information retrieval resources but this turned out to be quite tedious, so we don't assess it any longer. Transferable skills development is a combination of 1st year compulsory skills units followed by embedding in honours level units. Because each student has a different portfolio of honours options it isn't possible to 'control' this skills development to an ideal level...Interestingly, the students seem to prefer the embedding route – they are reluctant to see subject material diluted by too many core courses on skills development. I believe our Careers Centre people are generally impressed by the outgoing and flexible nature of most [name of department] students. This comes with the territory to an extent – lots of group work, field experience etc. Distinguishing whether this is naturally ingrained in the students who choose the subject in the first place or whether it is developed effectively here is not easy!' [53301, text units 79-88]

From an FE lecturer:

'Because we've got IT tutors and all students have got to attend IT classes and they've got to get a level two qualification. But you know that is great and that should remain in place but I think that all course tutors should be given the appropriate skills so that they can show students as well and that there should be more computers in class rooms just for demonstration purpose or powerpoint in fact because then you can demonstrate to the class exactly how you search even in you did it in the tutorial, if it was part of tutorial session that you can show students how to research and gather information. I mean we do it as part of the induction. They have to research so many books in the library. But I think you need to keep reinforcing it. I think you do the exercises, successful in the exercise but if they're not practising it continually they lose the skill. The same thing happens with tutors.' [76301, text units 223-235]

TASK: From the data provided, plus your own experience, identify up to five groups of student whose perceptions of the benefits of induction and the need for induction are likely to differ.

Set out the likely benefits (if any) and the need for induction (what they need to know about) for each group.

Questions for the group:

- Should induction sessions be voluntary or compulsory (i.e. is there a group for whom the benefits are negligible?)
- What should be included in induction, given the needs/benefits of the various groups?
- Is there any group that needs special attention in induction? If so, how may they be identified?
- Should teaching staff be involved in induction sessions? If so, how?
- Should induction integrate IT and use of EIS? Reasons for and against? If it should be integrated, how could this be achieved smoothly?
- What should LIS staff hope to achieve from induction sessions?

3 KEY SKILLS

Do 'information skills' have a high enough profile in Key Skills at present?

QCA key skills are:

- **communication**
- **application of number**
- **information technology**
- **working with others**
- **improving own learning and performance**
- **problem solving**

The QCA key skills are specified at five broad levels - from level 1 (below GCSE) to level 5 (junior middle management / post degree). Level 4 corresponds most closely to undergraduate level work, but student competencies in key skills may not necessarily match their competencies as defined by A level or other subject-specific qualifications.

(Source Centre for Developing and Evaluating Lifelong Learning, University of Nottingham, cdell web site)

The SCONUL Seven Pillars of Information Literacy envisages that information literacy can be viewed as a progression of skills:

- recognise information need
- distinguish ways of addressing gap
- construct strategies of locating
- locate and access
- compare and evaluate
- organise, apply and communicate
- synthesise and create. (Source Task Force on Information Skills (SCONUL) (1999). *Information skills in higher education*. London: SCONUL)

KEY SKILLS (IT)

Information Technology is about applying IT skills to suit different purposes. IT specifications are currently available at levels 1, 2, 3 and 4.

Candidates should show they can:

At **level 1** : find and present information, text, images and numbers.

At **level 2** : search and select, and present combined information

At **level 3** : plan, and use different sources to search for and select information, develop and exchange information.

At **level 4** : develop, reflect on, and evaluate their overall strategy

(Source Information Technology Policy, specifications and guidance, Key Skills Support Programme)

Extracts from JUSTEIS interviews: 'points to ponder'

From an FE college lecturer:

[Interviewer: How effective do you think students are at retrieving information, electronic information for you?...] Quite poor. Mainly because they [students], now they don't seem to get the training in key skills. They should have some input there but there's lots of issues to do with the quality of their key skills.' 121 [80302, text units 116-121]

From an HE lecturer:

'We've introduced a new module called Effective Communication and one of the things that it has in it is useful information sources and referencing. And that is a struggle to get into them but we are working on development of that module at the moment and I certainly am hoping that the developments are going to include

a large number of information gathering and library tutorials where we will actually set students challenges to go and find this information and knowing that there will be a route through it....It's a first semester module which is taken by every single student attending (name). And it's a core module. And it is designed to get those key skills for higher education into them. [85302, from text units 102-119]

From FE students:

'Well, we have an IT Key Skills lesson and that sometimes involves going onto the Internet and he gives us sheets and questions to answer about certain organisations. We did copyright as well, and then we have to look at certain pages to find like when was it first started – things like that. [92102, text units 42-46]

'We're doing IT key skills...Just basically teach you how to type and how to get into different programmes. They don't really go into the Internet a lot. [93111, from text units 136-140]

'Well, we do Key Skills, we've done mail merge, we're doing databases now and we've done a wee Internet project where you just cut and paste the pictures and stuff ready to make like a brochure.' [88105, text units 121-124]

'We did start with key skills this year. We did start doing some IT sort of things and communication skills and all that. But we had too many hours on our course and apparently we could do some of that in our lessons so they cut the hours or something. I don't know what happened. But word processing was quite handy. Because we do all our work on word processing and there is quick routes I've never seen before when I was doing key skills.' [76104, from text units 182-191]

'I already had Clait and IBT 2, when I came here so that was a help, from just being able to use the computer and find my way around it, but I didn't really know anything about the Internet when I started, or emailing, I'd never done that before.....It [Key Skills] wasn't terribly focused, like we needed stuff on Powerpoint which would have been useful, we didn't get anything like that, which would have been really helpful. But I think as well if it was tailored more into the fact that we are doing quite a specific course... I think some guidance on some good sites to go to would be helpful' [72103, from text units 169-173, 179 –185]

From an HE mature student:

'We received a little in our key skills module, which wasn't enough...You sit there and you stare at it [computer] and it's a machine, it's there to help but you are very frightened of it and I don't think we had enough input' [104112, from text units 186-187, 197-199]

TASK: From the scenarios provided, plus your own experience, identify the main information skills that you think should be emphasised in Key Skills 2/3 at the FE/HE interface.

Questions for the group:

- Which information skills should be expected of students leaving further education and entering higher education?
- Do students entering higher education have these skills?
- Are these skills emphasised sufficiently in the Key Skills framework?
- If not, what is the problem? Is it a problem in the framework itself or in its interpretation or in its implementation – or something else?
- How might you improve support for Key Skills?

4 STEPS TOWARDS CRITICAL APPRAISAL

How do we put in a framework that supports students in development of skills in appraising information (judging the quality of the information, and how the validity of the text, images, and numerical data can be appraised)?

Extracts from JUSTEIS interviews: 'points to ponder'

From an FE lecturer:

'You find that they [students] will come back and they'll have got information off American sites especially for things like social policy... and then another issue with them is that they get all the information and then they don't know what to do with it so they just print off any old thing without reading through it and being, and selecting really. Obviously that comes with training.' [80302, text units 126-131]

From an HE lecturer:

'They do receive sessions on searching and retrieving information as part of their research thread that runs through the course... But in addition to that, any of their modules, if their assignments are based around literature searching...then we would, they are assigned a tutor for tutorial support and if the students come in and say I can't find information on, then we would have discussions about what words have you used and what have you looked at.' [97303, from text units 180-188]

From HE students:

'My career also relies on how well I evaluate what you do, and I had to point out that I based some of my presentation yesterday on a study that was done by 5 American male nurses, so don't take my work for absolute gospel because this is resting on the interpretation of one person on the views of 5 people in this massive, massive, planet. We don't get taught that all research is bad research we get taught that there is always something to be learned from the study, but to be aware of the limitations, go and check some figures some figures...So I think we receive quite a healthy but cynical training on research.' [74114, from text units 136-146]

'I have been doing research on money laundering. Initially I went into the library but there are hardly any books on it, there is quite a lot in the journals in the library, but generally not a lot of hard stuff.. I resorted to the Internet. There is absolutely loads of stuff about money laundering. ABI inform, one of the databases we have here has been quite useful, actually most of the research I have been doing has been using it. ... Yes, that's for my law project, it's a 5000 word mini dissertation. It 's really interesting. There has been more about it since September 11th. There is always lots of stuff on the Internet but you can't depend on the reliability of it.....Just from using Yahoo and typing in money laundering, there were so many references, and so many links, you could sit there all day looking at it... [Interviewer: How do you go about deciding which ones are actually worth pursuing in depth?].... Firstly, there is normally quite a lot in other languages to be ruled out, and then I have to look to make sure there are reference sources and the author's name. With money laundering there is quite a lot from regulatory bodies so they are always good leads to have... [Interviewer: When you were looking for this stuff, why did you choose these particular places to look for it?]....ABI inform was recommended by one of the other people on my course, and Yahoo, I just always go to Yahoo and search for anything....[Interviewer: Are there other databases you could have used but you decided not to?].... I can't think of the names of them. FT Web site, all the newspaper Web sites have been quite useful whilst I've been researching. I am not that good with the University's databases, I have started using them more this

year, but there is so much information on the Internet that you just get lost in it.' [74107, from text units 9-45]

'I think it's best to really scrutinize..., I think it's really easy when you see a site like Tesco's and, you know, facts and figures, to jump on to it. You need to take a step back and scrutinize each site very hard...Okay, I look for two things. One is how relevant I think it's going to be, so if I'm looking for Tesco's sales figures, if it says that then okay and also the reputation, so if it's the BBC site I think that's bound to be good, if it's something like a Free serve site I wouldn't bother going into it so it's the reputation I look for. When we had a lecture on report writing you were told, you know, look out for reputable sites and don't bother with someone's personal website.' [104106, from text units 80-83, 93-99]

From a postgraduate (taught Masters):

'Sometimes PubMed gives you the full text but most of the time they only give you abstracts. That's the trouble. But sometimes you only want to get some general information so you are willing to get some, with the abstracts that's OK. Yes, it takes long time to read full text but sometimes you need it.' [103103, text units 40-44]

From PhD students:

'I didn't think it was so long before as it [US standards site] was showing...So they introduce the standard then have the debate...I think you've got to trust it [US standards site] and I looked when it was last updated and had no reason to think that the information is out of date' [87107, from text units 84-98]

'Fortunately I have a background in the legislation so I know that even quite a bit of the stuff that I'm coming across is er, useful in the sense that it gives you a flag for what you should be looking for, but if you're looking at specific legislation a lot of times, the Bill that you're looking at itself dies, when it gets connected to something else and the computer system can't deal with that... so that you access a human at the other who can deal with the process and say ok I know that this legislation vanished but did its substance get picked up in something else?' [62123, from text units 138-148]

TASK From the examples provided and your own experience, identify the main approaches to development of 'research and evaluation' (appraisal) skills among students.

Questions for the group:

- Do different disciplines need different approaches? Is there any opportunity at all for disciplines to learn from each other?
- What are the present gaps?
- How should LIS and teaching staff co-operate in the development of appraisal skills?
- What do LIS staff need to know to support development of appraisal skills among students?
- What do teaching staff need to know to support development of appraisal skills among students?

5 PURCHASING AND DEVOLVED BUDGETING

What is the appropriate level of involvement from departments when considering changes to purchasing of electronic information services?

Extracts from JUSTEIS interviews: 'points to ponder'

From FE Librarians:

'Departments do have allocations of their own and some of them have bought their own electronic services. There are certain departments that will buy into things, but there again, price can preclude them from that'. (128401)

'I just get a library budget...I know what's been spent in every subject area. One of things that's impossible to work out is how much is spent on HE but that's always one of the questions asked. You know, how come an HE book is an HE book in (certain subject area) and not an FE book...it's a book on (certain subject area), they'll all use it so I can't distinguish between them in that particular area.' (118401)

'I will comment on the fact that I don't think the college strategic policy is strong enough and gets overturned by departments, for example, departments purchase their own online resources without consultation with us and we don't know what they've got and that's a frustration as they only promote them to their own students and it's narrow because they're only going to a certain group of students and could easily be useful to others....we're a VERY departmentally run college. And we find that when staff do use one of these products and embed it in the curriculum, they don't necessarily check that it is suitable to answer the question they've asked the students to do, they just assume it is, and that's a big gap with lack of preparation.' (117401)

From HE librarians:

'We're actually just looking at those at the moment. Now this is our funding arrangement. We have at the moment a hybrid of where if something is specific to one faculty/discipline, it comes out of that faculty library budget. If they can make a case that it is relevant to three or more faculties/disciplines then we treat it as a multi-disciplinary resource. And we top slice those before we take...before we allocate all the faculty budgets. We had a proposal come up from our electronic resources co-ordination group which I can tell you about in a minute if you want, that said we think that all electronic resources should be top sliced including I hasten to add things like digitized materials, um, purchased through Heron and things like, DVD, should be top sliced and funded centrally. So we said well ok, we'll go away and look at it and the early indications of the review are that we should stay with like a mixed economy where things which very clearly belong to one programme or one faculty are funded by that faculties budget. But things which can clearly be demonstrated to being multi-disciplinary are funded centrally. Now whether we do that central funding with a top slice as another funding mechanism is open to question because at the moment we do not put the money which is allocated to the individual faculty librarian and the top slice together and say this is our materials budget because at the moment if a faculty librarian's asked, argued for something being centrally funded it doesn't have a knock on effect on the individual allocation. So it's a way of them getting more money through the back door because they can get more and more centrally funded and that's without damaging their individual allocations and I think probably from next financial year we're going to start merging the two to try bring home the point that every time we finance something centrally, it's got to be funded from somewhere.' (103401, text units 161-189)

From HE lecturers:

'I think the truthful answer to that is what I want to achieve for the department. I want it to be known nationally for specific fields, so for example, mental health is quite a big area. I suppose specialisation is one thing, is my target for the next two years. The other way of getting there, in terms of your project I hope is for us to identify databases which we can use and will make our research less laborious and make information accessible to us.' (104303, text units 77- 83)

(On VLEs and support of research and evaluation skills)

'...not giving as much information and knowledge, it's more about giving the skills to acquire and seek information. So I think although we do a fair amount I still see it as a progression in that we're expecting them more and more to find out their own information and if you're going to do that then and also as a professional, you've got to be able to filter that information and be critical about it. So I would see the fact that we actually probably need to support students more in that in the early days as we expect more of them really.' [97303, from text units 204-211]

'I hadn't done because I didn't know how to do it. I have been to several workshops that were run after Christmas within the faculty on how to put material up. I have put some stuff up but the main problem, first of all we were learning how to. It works best in html format...actually doing that is quite straightforward, but as soon as you want to do something a little more complex it gets difficult and writing links between files is difficult. Loading things up there is not as straightforward as it should be...an awful lot of my material is not really in the right format...and copyright issues.' [103301, from text units 63-75]

From an FE tutor:

'The thing we have got to be careful of...as I say we have a budget for the department...now if it's used throughout the college, then the college pays for it. We have to have subject specific stuff for engineering which we pay for. Once the department is closed...it can't be anywhere else. You go to the Flexicentre where there may be 50-60 computers but you can't access it. It's best to put it in the Flexicentre or Library where everyone can use it.'

TASK From the examples provided, and your own experience, identify some devolved budgeting models, and the likely degree of involvement that teaching staff have in the decision making process.

Questions for the group:

- What are the main drawbacks for a) the LIS, b) the teaching staff, with these devolved models?
- What are the main advantages for a) the LIS, b) the teaching staff with these devolved models?
- What is the influence of the following factors:
 - Size of devolved unit (department, Faculty)
 - Discipline
 - Research activity
 - Use of VLEs in the department

6 FE ISSUES

What are the priorities for development of the uptake of EIS in further education, and how can support structures be improved?

Extracts from JUSTEIS interviews: points to ponder:

From FE librarians:

'Basically it comes down to the "creative use of manpower". For example there will be a new resource room in a new building currently being completed. Somebody will be needed to man this room but it is not a time-consuming job. It is hoped that "creative" use of staffing will mean the person employed to look after this room will have other skills that can be exploited in further contexts.' [102401, text units 75-82]

'I've got a very small staff here. I've got one professional colleague – Assistant Librarian.' [76401, text units 89-90]

'We've just appointed an ILT Co-ordinator onto the library team. This was instead of replacing my Deputy Manager who had general responsibilities. We decided that we needed someone who had quite specific responsibilities for developing say the library website for helping with the new OLIB system across several sites, and looking at the problem of working with students with the electronic information, and doing some internal upstart training with library staff and with teaching staff.' [80401, text units 203-213]

'It's the sort of thing you would expect with generally warm words about resourcing and providing access, but as far as E-Learning is concerned, it hasn't come yet! There's a bit of doubt over that. I know senior management were looking at it about a year ago, but I think the price has put them off, so it hasn't really been taken anywhere yet.' [76401, text units 55-61]

From action research site A: research and information skills with IT a flexible taught, resource-based introduction to library research and information skills. Generates FEFC units.

From FE students:

'Yes, we were advised to do Becoming Webwise. I was not computer literate... Having a computer at home I still saw it as a thing in the corner of the room but since I came here ...even my son says what can I do on here? He's only 9...I'm a practical person, not academic, but since starting this course ... I find this more interesting. There is more to learn.' [98102, from text units 63-70]

'We've got key skills thingy, but I'm not really enjoying it because I'm, I can do Word, spreadsheets... I can do that and that's what we're doing. It's all word processing.. I want to know how to do web pages and things like that and that's not what key skills is about. [Interviewer: That's all that's offered to you?]'...Yeah...We may be able to get on the Internet but we're not going to learn much about it.' [93117, from text units 156-166]

'Hit and miss really. I just really taught myself. Because when I was in secondary school I sort of missed out on, IT wasn't compulsory. It was made compulsory the year I started my GCSEs because I didn't pick it. So I sort of taught myself really...But since I've come to college I've been having my key skills lessons. Everybody's moaning about them, they don't like them but I like them 'cos I get to learn new stuff. To everybody else it's old but to me it's new and I really like it.' [93116, from text units 160-170]

'We did, I can't remember what it was called now, but basically it was sort of like a computer like a test...all I can say it was like an exam and you sort of answered questions, like multiple-choice on the computer and it sort of gives you a sort of total at the end, and where you are. Just like a basic computer literacy test - keyskills or something like that it was called.' [75101, text units 116-120]

'Before I came here I didn't know how to use databases and spreadsheets properly so I'm learning how to do that with Key Skills and that's really useful with my coursework and doing mathematics IT.' [75116, text units 60-63]

'If you need information, if you need help with a computer or if you need to be shown how to do something you have to go out of your way to try and find somebody whose got the time to show you. There's nothing, there is, the one good thing that there is, if you've got time for it outside of your course, there is a free IT training session, like computer training session where they do show you, it's like a lesson, a course. I think you get a certificate for it as well... But it's not compulsory. It's only if you've got time, if you're on a part-time course and you've got half the week free then it's like left entirely up to you.' [80101, from text units 198-209]

'I know there's a facility to do so but I've never used it. With being a part time student I've never had a chance really but within work almost every day you have to search for something on the Internet or search for various bits of information.' [131107]

From FE staff:

'Time is a big thing, we don't have the time and when we find a decent site we'll tell them obviously but we don't have the time actually to go on the Internet.'

Many computer rooms are teaching rooms as well

'We're creating the structure for them but the availability of the room isn't there because of teaching.' [Action research site]

'We were looking at a more effective way of preparing for their examinations. So we were intending to put sample questions and mark schemes on the intranet so they could go and get the questions answered and then we would mark them. One out of 75 students said they would use it regularly...they wanted hard copies. The only other thing that they suggested would be really good if it was down loaded on to a disc so that they could take it home...Every 4 weeks...they have to go and book next week's half and hour for using the internet and they groan time and time again...

....Over the last 18 months we've built up for ourselves and the students a list of useful websites. They are on our college intranet system for students to use. They get a paper copy and we encourage them to go and use these sites to check on the usefulness and whether they're still available or not...' [121301]

TASK Review some of the following examples of some of the issues which have emerged during the JUSTEIS work, reflect on your own experience, and then answer the questions.

Questions for the group:

- Librarians in FE have had to be multi-skilled for some time. If librarians in FE were offered a course in e-learning – would that fill a need? What type of topics would you expect to find in this course?
- Regional Support Centres (RSCs) have undertaken a variety of activities among FE colleges. Are RSCs working well? If so, what has been particularly effective? Do you think there may be gaps in the RSC support structure?
- Does the key skills framework help improvement in information skills which FE students need? Arguments for and against, please.

Appendix 2.1 JUSTEIS 4 – HE sample by institution

	Pure & Applied Science	Maths & Engineering	Pure & Applied Social Science	Humanities & Arts	Clinical Medicine
Bath Spa UC 9				English & Creative Studies	
U Birmingham 1				Classics and Ancient History	Medical Sciences
U Bradford 5	Chemistry with Pharmaceutical and Forensic Science	Sports Technology			
Chester College of HE 7		Mathematics			Nursing & Midwifery
U Hertfordshire 2			Business Administration/Human Resource Management		
London Institute 2				Graphic Design (CSM)	
U Newcastle 4				English Language & Linguistics	
Nottingham Trent U 3		Surveying & Construction	Economics		
U Oxford 1					Medical Sciences
U Oxford Brookes 6			Sociology		
Royal Holloway & Bedford New College 8	Physics				
U Stirling 5				Philosophy	Nursing & Midwifery
Thames Valley U 3			Psychology		
UWIC 6	Biomedical Sciences & Toxicology				
Writtle College 10	Animal Science	Engineering			

Appendix 2.2 List of HEIs in sample

Bath Spa UC

U Birmingham

U Bradford

Chester College of HE

U Hertfordshire

London Institute

U Newcastle

Nottingham Trent U

U Oxford

Oxford Brookes

Royal Holloway & Bedford New College

U Stirling

Thames Valley U

UWIC

Writtle College

Appendix 2.3 JUSTEIS 4 HE sample by subject discipline

Pure & Applied Science

Cat.5 University of Bradford	Chemistry with Pharmaceutical & Forensic Science
Cat.6 University of Wales Institute Cardiff	Biomedical Sciences and Toxicology
Cat.8 Royal Holloway & Bedford New College	Physics
Cat.10 Writtle College	Animal Science

Maths & Engineering

Cat.3 Nottingham Trent University	Surveying and Construction
Cat.5 University of Bradford	Sports Technology
Cat.7 Chester College of HE	Mathematics
Cat.10 Writtle College	Engineering

Pure & Applied Social Science

Cat.1 University of Oxford	Economics
Cat.2 University of Hertfordshire	Business Administration/Human Resource Management
Cat.3 Thames Valley University	Psychology
Cat.6 Oxford Brookes University	Sociology

Humanities & Arts

Cat.1 University of Birmingham	Classics and Ancient History
Cat.2 London Institute (CSM)	Graphic Design
Cat.4 University of Newcastle	Languages & Linguistics
Cat.5 University of Stirling	Philosophy
Cat.9 Bath Spa University	English and Creative Studies

Clinical Medicine

Cat.1 University of Birmingham	Medical Sciences
Cat.3 Nottingham Trent University	Biomedical Sciences
Cat.5 University of Stirling	Nursing and Midwifery
Cat.7 Chester College of HE	Nursing and Midwifery

Appendix 2.4 Interview schedule for undergraduates and FE students

JUSTEIS Survey instrument (Strand A)

18th September 2002

Project authority

This research project is being conducted on behalf of the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils, and your department has given us permission to survey a small sample of staff and students.

Purpose of project

We are surveying patterns of use of electronic information services by students, academics and librarians across all sectors and disciplines within Higher Education and Further Education in the UK, in order to inform JISC about likely trends in the use of electronic information services of all varieties.

Why you have been chosen

A sample of different types of university and, within them, departments representing various academic disciplines, has been chosen at random. Within your department you have also been chosen at random for interview.

Anonymity

All the information you give us will be treated confidentially; no individuals, departments or universities will be identified in our results and we will report only overall trends and statistics.

Welcome and introductions.

Any questions?

Explain recording method(s)

Q1 Check that basic details are correct

Sex	Male <input type="checkbox"/> 1			Female <input type="checkbox"/> 2			98 NA	
Age	under 20 <input type="checkbox"/> 1	20-29 <input type="checkbox"/> 2	30-39 <input type="checkbox"/> 3	40-49 <input type="checkbox"/> 4	50-59 <input type="checkbox"/> 5	60 & over <input type="checkbox"/> 6 98 NA		
Access to University networked computers access		At college <input type="checkbox"/> 1	At term-time address <input type="checkbox"/> 2	Own ISP at term-time address ownsip <input type="checkbox"/> 1 98NA				
Current Department / School		univdept 98NA						
stutype STUDENTS								
Full-time <input type="checkbox"/> 1		Part-time <input type="checkbox"/> 2		Distance/Open learner <input type="checkbox"/> 3				
status Undergraduate <input type="checkbox"/> 1		status FE Student <input type="checkbox"/> 2		Year of study	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
Degree First Degree <input type="checkbox"/> 1		HND <input type="checkbox"/> 2	HNC <input type="checkbox"/> 3	BTEC or EDEXCEL Diploma <input type="checkbox"/> 4	AVCE <input type="checkbox"/> 5		ACCESS to HE <input type="checkbox"/> 6	
status Postgraduate <input type="checkbox"/> 3		Taught Masters <input type="checkbox"/> 7		Taught MA/MPhil/PhD <input type="checkbox"/> 8		PhD/Mphil/MA by Research <input type="checkbox"/> 9		
		HE Diploma <input type="checkbox"/> 10			PGCE <input type="checkbox"/> 11			
Current Course name		course 98 NA						
Residence	On Campus <input type="checkbox"/> 1			Off Campus <input type="checkbox"/> 2		98 NA		
stafftype STAFF 98 NA								
Type	Academic staff <input type="checkbox"/> 1			Research contract staff <input type="checkbox"/> 2				
Employed	staftime Full-time <input type="checkbox"/> 1			Part-time <input type="checkbox"/> 2				
Main teaching & research areas	subject			98 NA				

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	
Name:	
Tel. No:	Email:

Q2 Can you think back to a recent occasion when you needed to find information that involved you using a networked computer, or one connected to the Internet?

Prompts:

- professional, academic, personal
- can be informal or formal
- simple to complex
- sources: local, national or world, CD-ROM, Internet search, Web pages, database, dataset, databank, online texts...

We now need as much detail as you can remember about what you did, please

Prompts:

- what source(s) and service(s) did you use? Sused
- what led you to use this source? e.g. was this prompted by someone's suggestion (lecturer, peer, colleague), prompted by reading about this resource? where? Ssguide

prev ex 1 tutor 2 friend 3 read 4 course 5 lib advice 6 reading list 7 other 8
- were there alternative sources you might have used – manual or otherEIS? Saltern

no 2 yes 1
- where was the computer workstation which you used? e.g. office, home/room, library, public workstation room, laboratory swhere

college 1 own 2
- did you ask anyone for help? friend, colleague, help desk, library staff shelp

friend 1 library/IT staff 2 tutor 3 other 4
- was it a one-off / on-going? Surgent

urgent 1 ongoing 2
- how much time did you spend on this? stime

Were you aware of using more than one source, moving from one to another? e.g. clicked on link from bib. reference to go to full text of article, from website to website, from search engine results to website

PLEASE ENSURE ALL THE ABOVE ARE ADDRESSED

Q3 Why did you need this information? What were you trying to achieve?

- *what did you do with the information? Will it have another use later on? e.g. use in research paper, lecture, assignment, dissertation etc.*

Purpose/Reasons for use

spurpose

Coursework (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading, teaching preparation)

Job (project, routine, procedure for work) – PT /DL/FE students only

Final project/Dissertation/Thesis

Proposal for funded research or project

Bibliography or reference checking – **PG Research/Staff only**

Article or report for publication – **PG Research/Staff only**

Job search or application

Business travel

Leisure (**leisure travel, online shopping, societies, social clubs**)

Planning a college event

Administration (student records) – Staff only

Other

Q4 Did you find the information you wanted or are you still looking? Sfound

No 2 Yes 1 Some 3

Prompts:

- *question modified*

sxm

No 2 Yes 1

- *question answered*

- *abandoned*

stopt

No 2 Yes 1

- *delegated the process*

sdeleg

No 2 Yes 1

- *successful - how success measured?*

Satisfy

(effectiveness of search; degree of satisfaction with results)

dissat 12345 satis

- *any problems? e.g. availability, content, completeness, currency, timeliness, accessibility, format, accuracy, quality, convenience, effort of use, procedures and policies (e.g. needed password)*

sprobs

No 2 Yes 1

Q5 What type of searches of electronic information sources do you usually do?

Soften

No 2 Yes 1

- *was this unusual or something done regularly?*

Thank you. Now we'd like to use a slightly different approach, by looking at factors that affect what you are currently trying to achieve on professional, academic and personal fronts.

Q6 What do you need to sort out over the next 6 months/year? What do you need to accomplish/prioritise?

e.g. professional, academic, personal; this term/semester/academic year

marking, completing coursework, securing finance, buying goods, booking holiday, research funding, writing papers, contacting friends, etc?

Q7 What are the main factors/issues that are likely to ensure you successfully accomplish these – sort them out?

identify a limited number of areas in which satisfactory results will ensure success; vital factors only, core issues

Q8 What information do you need to help you achieve these objectives?

relate to factors, emphasis on electronic information

Q9 How much information skills / information retrieval training have you received in college?

skilearn

Prompts:

- *this could be part of the course given by tutors* 3
- *this could be part of the course but instruction given by information services/IT/Library staff* 2
- *Library/IT induction* 1
- *specialist training from external consultants* 4
- *online teaching/VLE/MLE software*
- *what did the training cover?*

Q10 What electronic information resources are important to you for your studies or work? What can't you do without?

sneed

do you need to access other electronic information which is not presently available to you?

are there other sources which you have heard about and intend to look at/use sometime?

what electronic information services/sources do you regularly use?

sfreque

Q11 How much texting or internet searching do you carry out with a mobile phone?

Is the phone a WAP phone? Do you do more texting than emailing?

Use prompts from short list as necessary (see EIS checklist)

Thank you very much for your time. The results of our research will be published ...

EIS checklist

Regular Use	always get as much detail as possible	Code
Email	discussion list, news group/VLEs	%em <input type="checkbox"/>
	professional/academic use	%ema <input type="checkbox"/>
	personal email	%emp <input type="checkbox"/>
Mobile phone texting	texting	%txting <input type="checkbox"/>
own HEI website or services	student records/timetables	%stad <input type="checkbox"/>
	local information	%loinf <input type="checkbox"/>
	lecture notes/lecturer's web home pages	%lhp <input type="checkbox"/>
	courseware/VLEs	%crw <input type="checkbox"/>
library catalogues	own HEI OPAC	%opac <input type="checkbox"/>
	library subject tree/subject index	%subtr <input type="checkbox"/>
	other HEIs	%oheis <input type="checkbox"/>
	COPAC/BL/other	%othlib <input type="checkbox"/>
electronic journals/emonographs/etextbooks	single ejournals – CDRom or web collection	%ejs <input type="checkbox"/>
	ebooks	%ebks <input type="checkbox"/>
	ereference material	%erefs <input type="checkbox"/>
Internet/WWW	search engine(s)	%sengs <input type="checkbox"/>
	bibliographic (<i>explain</i>)	
	databases – (WOS, BIDS)	%dbs <input type="checkbox"/>
	RDN - gateways/portals	%gtwy <input type="checkbox"/>
	other sites	%intoth <input type="checkbox"/>
WAP Mobile phone	using WAP phone sites	%wap <input type="checkbox"/>
CD-ROM	networked	
	stand alone	%cdrom <input type="checkbox"/>
Statistical or numeric or scientific datasets, text archives	local	
	other	%stats <input type="checkbox"/>

Interviewer's checklist

Question		Tick
Q1	Base data	
Q2	EIS service and sources used	
	Why choose this source?	
	Alternative sources?	
	Location of computer workstation used	
	Asked others for help?	
	One-off or on-going search?	
	When start / complete search?	
	How much time spent?	
	Awareness of moving from one source to another	
Q3	Why needed information?	
	What trying to achieve?	
	What did with information?	
	Use information again later?	
Q4	Found what wanted or still looking?	
	Effectiveness of search, satisfaction with results	
	Any problems?	
Q5	Usual type of search?	
	What types of searching usually?	
Q6	Objectives/priorities?	
Q7	Vital factors/issues to succeed?	
Q8	Information needed to help achieve objectives?	
Q9	Information skills training received?	
Q10	Important EIS, can't do without?	
	Access to others not currently available?	
	Intend to use others?	
	EIS used regularly (<i>prompts</i>)	
Q11	Use of mobile phone for texting or searching?	

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Appendix 2.5 HE Vignettes

HE Vignettes for JUSTEIS 4

Pure & Applied Sciences:

Physics.

HE: You need to find background information for an essay on general theories within astrophysics. Where would you look for this information?

HE: You have been asked to describe, using suitable physical examples, how Cartesian and polar co-ordinate systems are used to represent quantities that vary in 3-dimensional space.

Human Sciences.

HE: You've been asked to write an essay on theories of Human Evolution; where do you look for this information?

Pharmaceutical Sciences.

HE: You've been asked to find information on current research and trials of various drugs; where do you look for this?

Chemistry.

HE: You've been asked to look up information on various methods of making alcohol; where do you look for this?

Forensic Science.

HE: You've been asked to look up recent uses and findings of echo correlation analysis. Where do you look for such information?

Agriculture & Animal Science.

HE: You have been asked to write an essay on agricultural policies and their effects; where do you look for this information?

HE: You have been asked to write about any theories on animal rearing/husbandry; where do you look for this information?

Biology.

HE: You have been asked to make a comparative study of human evolution hypotheses; where do you look for this information?

HE: You have been asked to write an essay on the effects of current speed, nutrients and light on the development of biofilms in streams and rivers; where do you look for information to support your essay?

Toxicology.

HE: You've been asked to write about indicators and effects of ethanol intoxication. Where do you look for information to help with this?

Ecology.

HE: You need to find information on hybridism; where do you look for this information?

HE: You have been asked to explain why the soil concentration of crude or fuel oil contamination largely determines the nature and extent of its effect, and the need for active remedial treatment; where do you look for this information?

Genetics.

HE: You've been asked to write about the human genetic code; where do you look for this information?

HE: You have been asked to describe the various types of chromosome mutation, showing for each how the phenotype may be affected; where do you look for this information?

Environmental Biology.

HE: You have been asked to find information on various ecosystems and their differences; where do you look for such information?

HE: You have been asked to write an essay on algae and environmental monitoring; where do you look for information to support this?

Maths & Engineering:

Textile Technology.

HE: You've been asked to write a comparative essay on yarns and their uses: where do you look for this information?

Electronics.

HE: You have to conduct a seminar on the design of microprocessors; where would you look for supporting information?

Mathematical Sciences.

HE: You have been asked to describe the ideas that have lead to the Poisson distribution being used as a model for randomness; where do you look for this information?

Information Systems & Mathematics.

HE: You've been asked to explain the link between Boolean algebra and computers; where do you look for this information?

Agricultural Engineering.

HE: You have been asked to compare the thermodynamics between high temperature air and ambient air-drying of grain; where do you look for information to support this?

Computer Science & Information Systems.

HE: You have been asked to present a seminar on systems analysis covering soft, hard and object orientated analyses; where do you look for information to support this seminar?

HE: You have been asked to explain the advantages and disadvantages of ADSL and how it is claiming higher bandwidths than ISDN for Internet access; where do you look for information to support this?

Aeronautical, Civil, Mechanical Engineering.

HE: You have been asked to discuss thrust and propulsion and the dynamics of flight; where do you look for information to support your discussion?

HE: You have been asked to find research evidence of fire safety engineering in concrete; where do you look for this information?

HE: You have been asked to lead a seminar on the laws of thermodynamics; where do you look for information to support your seminar?

Materials Science.

HE: You have to take a seminar on the corrosion and mechanics of materials; where do you look for information to support this?

Sports Technology.

HE: You've been asked to talk about the principle of Conservation of Energy and how it applies to a squash ball being hit by a racquet. Where do you look up this information?

Pure & Applied Social Sciences:

Human Sciences.

HE: You need to gather information on attitudes towards ethnicity and nationalism in the UK; where do you look for this information?

Sociology.

HE: You have been asked to discuss the historical development of social theory; where do you look for information to support your discussion?

Social Psychology.

HE: You have been asked to discuss how various psychological paradigms apply to working conditions and organisational structures; where do you look for information to support your discussion?

HE: You have been asked to find research evidence on the effects of group processes on different types of demeanour; where do you look for this information?

Economics.

HE: You have been asked to discuss the main macroeconomic policies facing the UK; where do you look for information to support this discussion?

Psychology.

HE: You have been asked to look for research evidence on treatments for children with non-compliant behavioural problems; where do you look for this information?

Geography & Environment.

HE: You have been asked to critically assess Wilfred Owen's assertion that for every transport problem, there is likely to be a non-transport solution; where do you look for information to support your assessment?

HE: You have been asked to discuss how the continental tropics were affected by climatic changes during the last 18,000 years; where do you look for information to support your discussion?

Cultural Studies.

HE: You have been asked to discuss whether or not the term 'popular culture' can be easily defined; where do you look for information to support your discussion?

Law.

HE: You've been asked to write an essay on the Sale of Goods Acts, using recent instances of the application of consumer law; where would you look for this information?

HE: You have been asked to discuss the premise that the elements of good faith and significant imbalance in the fairness test in the Unfair Terms in Consumer Contracts Regulations 1999 might be seen as dealing with procedural and substantive unfairness respectively, but the elements do overlap. Where do you look for information to support your discussion?

Management.

HE: You've been asked to write about Drucker's theories of post-capitalist society and the transformation to a knowledge society. Where do you look for information to help you?

Religious Studies/Applied Theology.

HE: You've been asked to find information on the belief messages/doctrine from various religions; where would you look for this information?

Humanities & Arts:

English.

HE: You've been asked to discuss the effects of monologue and dialogue, showing examples. Where do you look for information to help you with this?

Classics & Ancient History.

HE: You've been asked to compare and contrast the political structures of Athens and Sparta. Where do you look for information to help you with this?

Graphic Design.

HE: You've been asked to discuss the success of the illustrated magazine in the 1860s with reference to the artists and engravers who contributed to its success. Where do you look for information to help you with this?

Languages & Linguistics.

HE: You've been asked to discuss the sociolinguistic differences between English vocabulary in Ireland and Wales and how it was expanded from Latin. Where do you look for information to help you with this?

Cultural History.

HE: You've been asked to discuss what specific ritual and religious needs can be inferred from the presence of hengiform monuments; where do you look for information to support your discussion?

Education.

HE: You need to find information on current research into changing educational environments; where would you look for this information?

HE: You have been asked to discuss the importance of free and structured play in the pre-school setting; where do you look for information to support your discussion?

Finance & Law.

HE: You have been asked to discuss the pertinence of seeking tax shields, their likely availability and, if available, their impact for each of the major stages in the life cycle of a typical corporation; where do you look for information to support your discussion?

HE: You have been asked to discuss what dangers exist and what protection is available to users of internet payment methods; where do you look for information to support your discussion?

Performing Arts.

HE: You have been asked to discuss the importance and effect of what is not depicted explicitly onstage in the work of a couple of dramatists; where do you look for information to support your discussion?

German.

HE: You have been asked to describe in detail the differences that exist in the form, function and status of various varieties of German; where do you look for the information to support this?

Business.

HE: You have been asked to discuss the different approaches to bringing about strategic change; where would you look for information to support your discussion?

Archaeology.

HE: You have been asked to discuss what kinds of information can be obtained from the study of prehistoric ceramics; where do you look for information to support your discussion?

HE: You've been asked to find details of various listed buildings around the UK; where do you look for this information?

Philosophy.

HE: You need to prepare for a seminar, comparing and contrasting Eastern and Western philosophies; where do you look for the information to support this?

Music.

HE: You have been asked to trace the origins of the concerto up to, and including, Corelli; where do you look for this information?

Drawing & Applied Arts.

HE: You have been asked to define the principal characteristics of Postmodernism as both an artistic and cultural phenomenon; where would you look for supporting information?

Clinical Medicine:

Biomedical Sciences.

HE: You have been asked to write an essay on the steroid hormones secreted by the adrenal cortex. Where would you go to look for information?

HE: You have a friend who is interested in the ocular features of albinism; where would you suggest they look for information?

Nursing.

HE: You've been asked to present some case studies, found in the literature, about unorthodox care treatments; where would you look for this information?

Dentistry.

HE: You have been asked to find research evidence looking at the benefits and drawbacks of electric toothbrushes and ordinary toothbrushes; where do you look for this evidence?

Medicine:

HE: You have been asked to look for information, for a seminar, on any research findings or current studies of Parkinson Supranuclear Palsy; where do you look for this information?

HE: You have been asked to investigate nerve supply to the parotid gland. How would you go about looking for this information?

Veterinary Science.

HE: You have been asked to find evidence from any research findings on the canine use of Glucosamine and chondroitin; where would you look for this information?

Physiotherapy.

HE: You have been asked to write about the pros and cons of physiotherapy for a patient suffering from Parkinson's disease, with progressive multiple system atrophy; where do you look for information on this subject?

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Appendix 2.6 Questionnaire for undergraduates and taught postgraduates

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs.

This questionnaire will only take a few minutes to complete so **PLEASE DO FILL IT IN AND RETURN IT!** If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher. No information given in this questionnaire will be linked to you, your department or the institution.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1) ☐ Male (2) ☐ Female
AGE: ☐ under 20 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60+
Do you have access to a college/university networked computer?

- (1) ☐ Yes, on campus
(2) ☐ Yes, at my term-time address (home, hall, hostel, digs)
(4) ☐ No

Do you have your own Internet service account (not provided by the college) for a computer at your term-time address (home, own room in hall, hostel, digs)?
☐ Yes ☐ No

Name of your faculty/school/department:

Name of the course you are currently studying:

Are you enrolled?
☐ Full-time ☐ Part-time ☐ Distance learner

What year of study are you now?

☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th

What qualification are you studying for now?

- (6) ☐ **Higher Education Diploma**
- (7) ☐ **First Degree**
- (8) ☐ **Postgraduate Diploma**
- (9) ☐ **PGCE**
- (10) ☐ **Masters Degree (Taught)**
- (11) ☐ **MPhil/PhD (Taught)**
- (13) ☐ **Other.....**

Where do you live during term-time?

- (1) ☐ **College hall, hostel**
- (2) ☐ **Off-campus (digs, with family)**

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.

Take a minute or so to think back and recollect all the details for ONE particular search.

Now please answer the following questions – tick the relevant boxes or write a fuller answer.

1. What was the purpose of the search?

(Please tick the category that best describes why you were looking for information)

- Coursework** (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading) ☐
- Final project/Dissertation/Thesis** ☐
- Job** (projects, routines, procedures for work) ☐
- Proposal for funded research or project** ☐
- Job search or application** ☐
- Business travel** ☐
- Leisure** (leisure travel, online shopping, societies, social clubs) ☐
- Planning a college event** ☐
- Other (please give details)** ☐

.....

2. Where did you carry out the search?

- Library/Learning Resource Centre** ☐
- College workstation/computer lab** ☐

- Own room in Hall of Residence ☐
- Home/term term-time address (not Hall of Residence) ☐
- At Work ☐
- Wap phone ☐
- Other (please give details) ☐

.....

3. What did you use to find this information?

Please give as much detail as you can about how you carried out the search or list various sources used

.....

.....

.....

4. If you needed to ask someone for help, who was it?

- Did not ask anyone ☐
- A friend ☐
- Library/IT staff ☐
- Tutor/Lecturer ☐
- Other (please give details) ☐

.....

5. Did you have any computer or electronic network service problems doing the search?

- Yes ☐
- No ☐

If Yes, please give details:

.....

6. Did you find the information you wanted?

- Yes ☐ (1)

No ☐ (2)
Only some of it ☐ (3)

7. Did you need to modify your search question or strategy at all?

Yes ☐
No ☐

If Yes, please give details of what you did:

.....
.....

8. What / Who led you to the electronic materials/services used for your search?

Previous search experience and results ☐
Lecturer/Tutor suggestion ☐
Friend/Colleague suggestion ☐
Read about it ☐
Course/Session organised wholly/partly by library/IT services ☐
Library/IT services staff advice ☐
Reading list ☐
Course website ☐
Other (please give details) ☐

.....

9. How did you feel about the results of your search?

Totally satisfied ☐ (2)
Satisfied ☐ (1)
Totally dissatisfied ☐ (0)

10. What electronic information materials/services do you use frequently?

.....
.....
.....
.....
.....
.....

11. Which electronic information materials/services would you find it difficult to manage without for your studies or work?

(Please give as much detail as you can)

.....
.....
.....
.....
.....
.....

12. a) Do you use the subject index/A-Z subject tree for electronic services, possibly found on your library/information services web site?

Yes ☐ (1)
No ☐ (2)
Don't know ☐ (4)

- b) Do you use any online teaching sites directed by your teaching staff?

Yes ☐ (1)
No ☐ (2)

13. a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)

- | | |
|--|--------------------------|
| Library induction/orientation session | <input type="checkbox"/> |
| Specialist session for subject area | <input type="checkbox"/> |
| Training as part of the curriculum by a course tutor | <input type="checkbox"/> |
| Informal help as needed by library staff | <input type="checkbox"/> |
| None | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

b) If you have ticked any of the above, what was covered by the training?

.....

Many thanks for your time. Please be assured that all information will be non-attributable.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details (Please print clearly)	
Name:	
Tel. No:	Email:

v.2 RET 24th September 2002

N.B. FORMATTING IS DIFFERENT ON THE ACTUAL QUESTIONNAIRE FORM

Appendix 2.7 Academic and research staff questionnaire

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs.

This questionnaire will only take a few minutes to complete so **PLEASE DO FILL IT IN AND RETURN IT!** If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher. No information given in this questionnaire will be linked to you, your department or the institution.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1) ☐ Male (2) ☐ Female
AGE: ☐ under 20 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60+

Do you have access to a college/university networked computer?

- (1) ☐ Yes, on campus
(2) ☐ Yes, at my term-time address
(4) ☐ No

Do you have your own Internet service account for a computer at your term-time address, not provided by the college?

☐ Yes ☐ No

Name of your faculty/school/department:

Are you enrolled/employed? ☐ Full-time ☐ Part-time ☐
Teaching staff ☐ PG Research ☐ Staff undertaking PG Research
☐ Contract Research staff

What are your main teaching / research / work areas within the department?

What year of your research are you in now? (PGs only)

☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th

What qualification are you studying for now?

- (12) ☐ **MA/MPhil/PhD (by Research)**
(98) ☐ **Not applicable**
☐ **Other.....**

Where do you live during term-time?

- (1) ☐ **College hall, hostel**
(2) ☐ **Off-campus**

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.

Take a minute or so to think back and recollect all the details for ONE particular search.

Now please answer the following questions – tick the relevant boxes or write a fuller answer.

14. What was the purpose of the search?

Please tick the category that best describes why you were looking for information.

- | | |
|---|--------------------------|
| Coursework (teaching preparation, background reading) | <input type="checkbox"/> |
| Thesis | <input type="checkbox"/> |
| Article or report for publication | <input type="checkbox"/> |
| Proposal for funded research or project | <input type="checkbox"/> |
| Bibliography or reference checking | <input type="checkbox"/> |
| Job search or application | <input type="checkbox"/> |
| Business travel | <input type="checkbox"/> |
| Leisure (leisure travel, online shopping, societies, social clubs) | <input type="checkbox"/> |
| Administration (student records etc.) | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

15. Where did you carry out the search?

- Library/Learning Resource Centre** ☐

- | | |
|---|--------------------------|
| College workstation/computer lab | <input type="checkbox"/> |
| Own room in Hall of Residence | <input type="checkbox"/> |
| Home/term term-time address (not Hall of Residence) | <input type="checkbox"/> |
| Own office | <input type="checkbox"/> |
| Wap phone | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |
-

3. What did you use to find this information?

Please give as much detail as you can about how you carried out the search or list various sources used.

.....

.....

.....

.....

4. If you needed to ask someone for help, who was it?

- | | |
|-----------------------------|--------------------------|
| Did not ask anyone | <input type="checkbox"/> |
| A friend/colleague | <input type="checkbox"/> |
| Library/IT staff | <input type="checkbox"/> |
| Tutor/Lecturer | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |
-

5. Did you have any computer or electronic network service problems doing the search?

- | | |
|-----|--------------------------|
| Yes | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

If Yes, please give details:

.....

6. Did you find the information you wanted?

- | | |
|-----|---|
| Yes | <input type="checkbox"/> ⁽¹⁾ |
| No | <input type="checkbox"/> ⁽²⁾ |

Only some of it ☐ (3)

7. Did you need to modify your search question or strategy at all?

Yes ☐

No ☐

If Yes, please give details of what you did:

.....
.....

8. What / Who led you to the electronic materials/services used for your search?

Previous search experience and results ☐

Lecturer/Tutor suggestion ☐

Friend/Colleague suggestion ☐

Read about it ☐

Course/Session organised wholly/partly
by library/IT services ☐

Library/IT services staff advice ☐

Departmental website ☐

Other (please give details) ☐

.....

9. How did you feel about the results of your search?

Totally satisfied ☐ (2)

Satisfied ☐ (1)

Totally dissatisfied ☐ (0)

10. What electronic information resources/services do you use frequently?

.....

.....

.....

.....

.....

.....

11. What electronic information materials/services would you find it difficult to manage without for your studies / work?

(Please give as much detail as you can)

.....

.....

.....

.....

.....

.....

12. a) Do you use the subject index/A-Z subject tree for electronic services, possibly found on your library/information services web site?

Yes ☐ (1)

No ☐ (2)

Don't know ☐ (4)

b) Do you use any online teaching sites/VLEs/MLEs?

Yes ☐ (1)

No ☐ (2)

If Yes, please give details of the sites used:

.....

.....

.....

13. a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)

- | | |
|--|--------------------------|
| Library/IT services induction session | <input type="checkbox"/> |
| Library/IT services specialist session | <input type="checkbox"/> |
| Training as part of the curriculum by a course tutor | <input type="checkbox"/> |
| Specialist training from an external consultant | <input type="checkbox"/> |
| Informal help as needed by library staff | <input type="checkbox"/> |
| None | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

b) If you have ticked one of the above, what was covered by the training?

.....

Many thanks for your time. Please be assured that all information will be non-attributable.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	(Please print clearly)	
Name:		
Tel. No:		Email:

v.2 RET 24rd September 2002

N.B FORMATTING DIFFERS FROM THE ACTUAL QUESTIONNAIRE USED

Appendix 3.1 FE sample by institution

	Applied Science and Technology	Maths & Engineering	Health, Care & Social Sciences	Humanities & Arts
Bridgwater College 2		HNC Mechatronics (Weds & Thurs)	AVCE Health & Social Care	
Cannock Chase Technical College 2			Nat. Dip. Childcare	
Canterbury College 3			Nat. Dip. Health Studies	HND Archaeology
Darlington College of Technology 2		Nat. Dip. Engineering		
Coleg Gwent 1		Nat. Dip. Electrical Electronics	Nat. Dip. Business	
Kingston College 3		Nat. Cert. Engineering	HNC Computer Studies	
Kingston Maurward College 4	Nat. Dip. Animal Care	Nat. Cert./Dip. Agriculture		
Lambeth College 2	AVCE Science			Nat. Dip. Media & Photography
Nelson and Colne College 3	Nat. Dip. Applied Science (Sports & Exercise)			
Oaklands College St. Albans 2				Nat. Dip. Popular Music
Plumpton College 4	HND Wine Studies			
Salisbury College 2		Nat. Dip. Engineering		HND Travel & Tourism
Coleg Sir Gar 2			Nat. Dip. Early Years	
South Nottingham College 1				Nat. Dip Three- Dimensional Design
St. Helens College 1	HNC Science (Chemistry)			
Stratford-upon-Avon College 3	Nat. Dip. Science			Access to Humanities

Appendix 3.2 JUSTEIS 4 FE sample by subject discipline

Applied Science and Technology

Cat. 1 St. Helens College	HNC Science (Chemistry)
Cat. 2 Lambeth College	AVCE Science
Cat. 3 Nelson and Colne College	National Diploma Applied Science (Sports & Exercise)
Cat. 3 Stratford-upon-Avon College	National Diploma Science
Cat. 4 Kingston Maurward College	National Diploma Animal Care
Cat. 4 Plumpton College	HND Wine Studies

Maths & Engineering

Cat. 1 Coleg Gwent	National Diploma Electrical Electronics
Cat. 2 Bridgwater College	HNC Mechatronics
Cat. 2 Darlington College of Technology	National Diploma Engineering
Cat. 2 Salisbury College	National Diploma Engineering
Cat. 3 Kingston College	National Certificate Engineering
Cat. 4 Kingston Maurward College	National Cert./Dip. Agriculture

Health, Care & Social Sciences

Cat. 1 Coleg Gwent	National Diploma Business
Cat. 2 Bridgwater College	AVCE Health & Social Care
Cat. 2 Coleg Sir Gar	National Diploma Early Years
Cat. 2 Cannock Chase Technical College	National Diploma Childcare
Cat. 3 Canterbury College	National Diploma Health Studies
Cat. 3 Kingston College	HNC Computer Studies

Humanities & Arts

Cat. 1 South Nottingham College	National Diploma 3-Dimensional Design
Cat. 2 Lambeth College	National Diploma Media & Photography
Cat. 2 Oaklands College St. Albans	National Diploma Popular Music
Cat. 2 Salisbury College	HND Travel & Tourism
Cat. 3 Canterbury College	HND Archaeology
Cat. 3 Stratford-upon-Avon College	Access to Humanities

Appendix 3.3 Questionnaire for FE students

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs.

This questionnaire will only take a few minutes to complete so **PLEASE DO FILL IT IN AND RETURN IT!** If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher. No information given in this questionnaire will be linked to you, your department or the institution.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1) ☐ Male (2) ☐ Female
AGE: ☐ under 20 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59
☐ 60+

Do you have access to a college-networked computer?

- (1) ☐ Yes, on campus
(2) ☐ Yes, at my term-time address (home, hostel, digs)
(4) ☐ No

Do you have your own Internet service account for a computer at your term-time address (home, hostel, digs), not provided by the college?

☐ Yes ☐ No

Name of your course:

Are you enrolled? ☐ Full-time ☐ Part-time

What year of your course are you in now? ☐ 1st ☐ 2nd ☐ 3rd

What qualification are you studying for now?

- (1) ☐ **BTEC/EDEXCEL National Diploma**
- (14) ☐ **HND**
- (15) ☐ **HNC**
- (16) ☐ **AVCE**
- (5) ☐ **Access to Higher Education**

Where do you live during term-time?

- (1) ☐ **College hostel**
- (2) ☐ **Off-campus (digs, with family)**

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.

Take a minute or so to think back and recollect all the details for ONE particular search.

Now please answer the following questions – tick the relevant boxes or write a fuller answer.

16. What was the purpose of the search?

Please tick the category that best describes why you were looking for information.

- Coursework** (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading) ☐
- Final project/Dissertation** ☐
- Job** (projects, routines, procedures for work) ☐
- Proposal for funded research or project** ☐
- Job search or application** ☐
- Business travel** ☐
- Leisure** (leisure travel, online shopping, societies, social clubs) ☐
- Planning a college/work event** ☐
- Other (please give details)** ☐

.....

17. Where did you carry out the search?

- | | |
|---|--------------------------|
| Library/Learning Resource Centre | <input type="checkbox"/> |
| College workstation/computer lab | <input type="checkbox"/> |
| Own room in Hall of Residence | <input type="checkbox"/> |
| Home/term term-time address (not Hall of Residence) | <input type="checkbox"/> |
| At work | <input type="checkbox"/> |
| Wap phone | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

3. What did you use to find this information?

Please give as much detail as you can about how you carried out the search or list various sources used.

.....

4. If you needed to ask someone for help, who was it?

- | | |
|-----------------------------|--------------------------|
| Did not ask anyone | <input type="checkbox"/> |
| A friend/family | <input type="checkbox"/> |
| Library/IT staff | <input type="checkbox"/> |
| Tutor/Lecturer | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

5. Did you have any computer or electronic network service problems doing the search?

- | | |
|-----|--------------------------|
| Yes | <input type="checkbox"/> |
| No | <input type="checkbox"/> |

If Yes, please give details:

.....

(8) **6. What / Who led you to the electronic materials/services used for your search?**

- | | |
|--|--------------------------|
| Previous search experience and results | <input type="checkbox"/> |
| Lecturer/Tutor suggestion | <input type="checkbox"/> |
| Friend/Colleague/Family suggestion | <input type="checkbox"/> |
| Read about it | <input type="checkbox"/> |
| Course/Session organised wholly/partly | <input type="checkbox"/> |
| by library/IT services | <input type="checkbox"/> |
| Library/IT services staff advice | <input type="checkbox"/> |
| Reading list | <input type="checkbox"/> |
| Course website | <input type="checkbox"/> |
| Other (please give details) | <input type="checkbox"/> |

.....

(9) **7. How did you feel about the results of your search?**

- | | |
|----------------------|------------------------------|
| Totally satisfied | <input type="checkbox"/> (2) |
| Satisfied | <input type="checkbox"/> (1) |
| Totally dissatisfied | <input type="checkbox"/> (0) |

(13) **8. a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)**

- Library/IT services induction session ☐
- Keyskills session ☐
- During class session with course tutor ☐
- Informal help as needed from library staff ☐
- None ☐
- Other (please give details) ☐

.....

b) If you have ticked any of the above, what was covered by the training?

.....

.....

.....

Many thanks for your time. Please be assured that all information will be confidential.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details (Please print clearly)	
Name:	
Tel. No:	Email:

v.3 RET 25th September 2002

NB FORMATTING DIFFERS FROM THAT USED IN THE ACTUAL QUESTIONNAIRE

Appendix 3.4 Interview schedule for undergraduates and FE students

JUSTEIS Survey instrument (Strand A)

18th September 2002

Project authority

This research project is being conducted on behalf of the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils, and your department has given us permission to survey a small sample of staff and students.

Purpose of project

We are surveying patterns of use of electronic information services by students, academics and librarians across all sectors and disciplines within Higher Education and Further Education in the UK, in order to inform JISC about likely trends in the use of electronic information services of all varieties.

Why you have been chosen

A sample of different types of university and, within them, departments representing various academic disciplines, has been chosen at random. Within your department you have also been chosen at random for interview.

Anonymity

All the information you give us will be treated confidentially; no individuals, departments or universities will be identified in our results and we will report only overall trends and statistics.

Welcome and introductions.

Any questions?

Explain recording method(s)

Q1 Check that basic details are correct

Sex	Male <input type="checkbox"/> 1			Female <input type="checkbox"/> 2 98 NA		
Age	under 20 <input type="checkbox"/> 1	20-29 <input type="checkbox"/> 2	30-39 <input type="checkbox"/> 3	40-49 <input type="checkbox"/> 4	50-59 <input type="checkbox"/> 5	60 & over <input type="checkbox"/> 6 98 NA
Access to University networked computers access		At college <input type="checkbox"/> 1	At term-time address <input type="checkbox"/> 2	Own ISP at term-time address ownsip <input type="checkbox"/> 1 98NA		
Current Department / School		univdept 98NA				
stutype STUDENTS						
Full-time <input type="checkbox"/> 1		Part-time <input type="checkbox"/> 2		Distance/Open learner <input type="checkbox"/> 3		
status Undergraduate <input type="checkbox"/> 1		status FE Student <input type="checkbox"/> 2		Year of study year	1 <input type="checkbox"/>	2 <input type="checkbox"/>
Degree First Degree <input type="checkbox"/> 1		HND <input type="checkbox"/> 2	HNC <input type="checkbox"/> 3	BTEC or EDEXCEL Diploma <input type="checkbox"/> 4	AVCE <input type="checkbox"/> 5	ACCESS to HE <input type="checkbox"/> 6
status Postgraduate <input type="checkbox"/> 3		Taught Masters <input type="checkbox"/> 7		Taught MA/MPhil/PhD <input type="checkbox"/> 8		PhD/Mphil/MA by Research <input type="checkbox"/> 9
		HE Diploma <input type="checkbox"/> 10			PGCE <input type="checkbox"/> 11	
Current Course name		course 98 NA				
Residence	On Campus <input type="checkbox"/> 1			Off Campus <input type="checkbox"/> 2 98 NA		
stafftype STAFF 98 NA						
Type	Academic staff <input type="checkbox"/> 1			Research contract staff <input type="checkbox"/> 2		
Employed	stafftime Full-time <input type="checkbox"/> 1			Part-time <input type="checkbox"/> 2		
Main teaching & research areas	subject 98 NA					

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	
Name:	
Tel. No:	Email:

Q2 Can you think back to a recent occasion when you needed to find information that involved you using a networked computer, or one connected to the Internet?

Prompts:

- professional, academic, personal
- can be informal or formal
- simple to complex
- sources: local, national or world, CD-ROM, Internet search, Web pages, database, dataset, databank, online texts...

We now need as much detail as you can remember about what you did, please

Prompts:

- what source(s) and service(s) did you use? Sused
- what led you to use this source? e.g. was this prompted by someone's suggestion (lecturer, peer, colleague), prompted by reading about this resource? where? Ssguide

prev ex 1 tutor 2 friend 3 read 4 course 5 lib advice 6 reading list 7 other 8
- were there alternative sources you might have used – manual or otherEIS? Saltern

no 2 yes 1
- where was the computer workstation which you used? e.g. office, home/room, library, public workstation room, laboratory swhere

college 1 own 2
- did you ask anyone for help? friend, colleague, help desk, library staff shelp

friend 1 library/IT staff 2 tutor 3 other 4
- was it a one-off / on-going? Surgent

urgent 1 ongoing 2
- how much time did you spend on this? stime

Were you aware of using more than one source, moving from one to another? e.g. clicked on link from bib. reference to go to full text of article, from website to website, from search engine results to website

PLEASE ENSURE ALL THE ABOVE ARE ADDRESSED

Q3 Why did you need this information? What were you trying to achieve?

- *what did you do with the information? Will it have another use later on? e.g. use in research paper, lecture, assignment, dissertation etc.*

Purpose/Reasons for use

spurpose

Coursework (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading, teaching preparation)

Job (project, routine, procedure for work) – PT /DL/FE students only

Final project/Dissertation/Thesis

Proposal for funded research or project

Bibliography or reference checking – **PG Research/Staff only**

Article or report for publication – **PG Research/Staff only**

Job search or application

Business travel

Leisure (**leisure travel, online shopping, societies, social clubs**)

Planning a college event

Administration (student records) – Staff only

Other

Q4 Did you find the information you wanted or are you still looking? Sfound

No 2 Yes 1 Some 3

Prompts:

- *question modified*

sxm

No 2 Yes 1

- *question answered*

- *abandoned*

stopt

No 2 Yes 1

- *delegated the process*

sdeleg

No 2 Yes 1

- *successful - how success measured?*

Satisfy

(effectiveness of search; degree of satisfaction with results)

dissat 12345 satis

- *any problems? e.g. availability, content, completeness, currency, timeliness, accessibility, format, accuracy, quality, convenience, effort of use, procedures and policies (e.g. needed password)*

sprobs

No 2 Yes 1

Q5 What type of searches of electronic information sources do you usually do?

Soften

No 2 Yes 1

- *was this unusual or something done regularly?*

Thank you. Now we'd like to use a slightly different approach, by looking at factors that affect what you are currently trying to achieve on professional, academic and personal fronts.

Q6 What do you need to sort out over the next 6 months/year? What do you need to accomplish/prioritise?

e.g. professional, academic, personal; this term/semester/academic year

marking, completing coursework, securing finance, buying goods, booking holiday, research funding, writing papers, contacting friends, etc?

Q7 What are the main factors/issues that are likely to ensure you successfully accomplish these – sort them out?

identify a limited number of areas in which satisfactory results will ensure success; vital factors only, core issues

Q8 What information do you need to help you achieve these objectives?

relate to factors, emphasis on electronic information

Q9 How much information skills / information retrieval training have you received in college?

skilearn

Prompts:

- *this could be part of the course given by tutors* 3
- *this could be part of the course but instruction given by information services/IT/Library staff* 2
- *Library/IT induction* 1
- *specialist training from external consultants* 4
- *online teaching/VLE/MLE software*
- *what did the training cover?*

Q10 What electronic information resources are important to you for your studies or work? What can't you do without?

sneed

do you need to access other electronic information which is not presently available to you?

are there other sources which you have heard about and intend to look at/use sometime?

what electronic information services/sources do you regularly use?

sfreque

Q11 How much texting or internet searching do you carry out with a mobile phone?

Is the phone a WAP phone? Do you do more texting than emailing?

Use prompts from short list as necessary (see EIS checklist)

Thank you very much for your time. The results of our research will be published ...

EIS checklist

Regular Use	always get as much detail as possible	Code
Email	discussion list, news group/VLEs	%em <input type="checkbox"/>
	professional/academic use	%ema <input type="checkbox"/>
	personal email	%emp <input type="checkbox"/>
Mobile phone texting	texting	%txting <input type="checkbox"/>
own HEI website or services	student records/timetables	%stad <input type="checkbox"/>
	local information	%loinf <input type="checkbox"/>
	lecture notes/lecturer's web	
	home pages	%lhp <input type="checkbox"/>
	courseware/VLEs	%crw <input type="checkbox"/>
library catalogues	own HEI OPAC	%opac <input type="checkbox"/>
	library subject tree/subject index	%subtr <input type="checkbox"/>
	other HEIs	%oheis <input type="checkbox"/>
	COPAC/BL/other	%othlib <input type="checkbox"/>
electronic journals/emonographs/etextbooks	single ejournals – CDRom or web collection	%ejs <input type="checkbox"/>
	ebooks	%ebks <input type="checkbox"/>
	ereference material	%erefs <input type="checkbox"/>
Internet/WWW	search engine(s)	%sengs <input type="checkbox"/>
	bibliographic (<i>explain</i>)	
	databases – (WOS, BIDS)	%dbs <input type="checkbox"/>
	RDN - gateways/portals	%gtwy <input type="checkbox"/>
	other sites	%intoth <input type="checkbox"/>
WAP Mobile phone	using WAP phone sites	%wap <input type="checkbox"/>
CD-ROM	networked	
	stand alone	%cdrom <input type="checkbox"/>
Statistical or numeric or scientific datasets, text archives	local	
	other	%stats <input type="checkbox"/>

Interviewer's checklist

Question		Tick
Q1	Base data	
Q2	EIS service and sources used	
	Why choose this source?	
	Alternative sources?	
	Location of computer workstation used	
	Asked others for help?	
	One-off or on-going search?	
	When start / complete search?	
	How much time spent?	
	Awareness of moving from one source to another	
Q3	Why needed information?	
	What trying to achieve?	
	What did with information?	
	Use information again later?	
Q4	Found what wanted or still looking?	
	Effectiveness of search, satisfaction with results	
	Any problems?	
Q5	Usual type of search?	
	What types of searching usually?	
Q6	Objectives/priorities?	
Q7	Vital factors/issues to succeed?	
Q8	Information needed to help achieve objectives?	
Q9	Information skills training received?	
Q10	Important EIS, can't do without?	
	Access to others not currently available?	
	Intend to use others?	
	EIS used regularly (<i>prompts</i>)	
Q11	Use of mobile phone for texting or searching?	

v.1 RET 18th September 2002

Appendix 3.5 FE Vignettes

FE Vignettes for JUSTEIS 4

Applied Science and Technology:

Horticulture.

FE: A friend is interested in growing insect eating plants. Where would you suggest they look for information on such plants and where to find them?

Animal Science.

FE: A friend is trying to find out information about their bulldog and any health problems that the breed may get in the future, but doesn't want to ask the vet. How would you advise them to search for this information?

General Science.

FE: You want to find out general information about conduction, convection and radiation or atmospheric pressure. Where are you going to look for this?

Biology.

FE: A friend needs general information on human evolution for an essay, and doesn't know where to start. How would you advise them to go about searching for this information?

Wine Studies.

FE: You have to write an essay on the best use of pesticides on grapes for winemaking. Where would you look for information to support your essay?

Chemistry.

FE: You must write an essay on the various levels of structure found in proteins. Where would you look for information to support your essay?

Sports & Exercise.

FE: You must write an essay on anatomy, discussing the best use of exercises to work the various bone and muscle groups in the body to their optimum level. Where would you look for information to support your essay?

Maths & Engineering:

IT Engineering/Technology.

FE: You want to find information on different computer platforms and compatible software; where would you look for such information?

Mechanical & Electrical Engineering.

FE: You want to find information on designs of various engines; where would you look for this information?

Construction.

FE: You need to find out information on different grades of sand for cement and their uses; how would you find this information?

Mechatronics.

FE: You've been asked to write an essay on the pros and cons of stepless gearboxes and conventional gearboxes. Where do you look for information on this?

Agriculture.

FE: You have to discuss the pros and cons of fixed chamber and variable chamber round balers. Where do you look for information to support your discussion?

FE: You must write an essay on the effects of weeds on crop plants and yields. Where do you look for information to support your essay?

Health, Care & Social Sciences:**Computer Studies.**

FE: You need to apply either a soft systems analysis or a structured systems analysis method to a project and justify your choice. Where do you look for information to support your choice?

Business Studies.

FE: You've been asked to write an essay on the introduction of the EURO in Europe, and how it may affect UK business. Where do you look for information on this?

People & Social change.

FE: You need to find information on different cultures and social structures for an assignment; where would you look for this information?

Public Services.

FE: You need to write an essay on the history of the British Police Force and changes over the years; where do you look for information on this?

Sports Recreation.

FE: You want to find a list of sports activity centres in the UK, with a view to booking a holiday; where do you look for this?

Childhood Studies.

FE: You need to find information on the theory of playing being very important for child development; where do you look for this?

Veterinary Nursing.

FE: You need to find information about looking after animals under anaesthetic; where do you look for this?

Childcare.

FE: After qualifying, you want to start up your own crèche. Where do you look for information on starting up such a business?

Care Practice.

FE: A client/patient has asked you to find information on practical ways to deal with disabilities around the home; where would you look for this information?

Nursing.

FE: You've been asked to write an essay on responding to death and bereavement in the work situation. Where would you look for information on existing research on this subject?

Health Studies.

FE: You've been asked to write an essay on anatomy and physiology, looking at the different bones making up the skeleton and the use of muscles. Where do you look for information on this?

Humanities & Arts:

Theatre, Music Studies.

FE: You want to find information on the history of various theatres in the UK; where would you look for this?

Hospitality/Catering.

FE: You want to compare various management styles for an assignment; where would you look for this information?

Beauty Therapy.

FE: You need to check up on some policies & regulations regarding the use of chemicals in various beauty therapies; where would you look for these?

Leisure & Tourism.

FE: You need to find information on Arts Centres in the UK and what they can offer; where do you look for this information?

Fashion & Clothing.

FE: You want to find an in-depth explanation about the changes in fashion through the centuries; where are you likely to search for this information?

Archaeology.

FE: You've been asked to find details of various listed buildings around the UK; where do you look for this information?

Media & Photography.

FE: You've been asked to write an essay on why and how particular media productions or photographers have influenced you. Where do you look for information on this?

Popular Music.

FE: You've been asked to write an essay on the progression of popular music to acid house and garage music. Where do you look for information on this?

3-D Design.

FE: You've been asked to write a report comparing and justifying the use of various 3D software packages. Where do you look for information to help you with this?

Access to Humanities.

FE: You've been asked to write an essay on how historically-based culture can be reconciled with the globalised culture of modern living. Where do you look for information to help you with this?

v.2 RET 26th Sept. 2002

Appendix 4.1 Interview schedule for purchasing intentions

Interview schedule for purchasing and management intentions for EIS.

Perceptions of services to users:

1. What do you perceive to be the main benefits to users of electronic information services? (Electronic journals, databases, datasets – any difference between staff and students?)
2. Are there any drawbacks as far as the users are concerned?
3. Can you give me some idea of some of the current concerns you may have? Are there changes in your environment/HE institution which may affect your ability to plan effectively for EIS?
4. Do you have any special arrangements for departmental libraries, remote campuses or distance learning students - or other students not on site for a good proportion of their course?

Management and Budgeting Issues:

5. What are some of the management implications of these electronic information services - could we cover the ways you have had to make staffing changes to cope with service changes?
6. How do you go about the organisation, development and maintenance of the Library/Information Services web site?
7. How do you deal with the licensing issues (print/electronic bundling, long-term vs short term agreements?) What about collaborative/consortia arrangements with other HE institutions - how do you feel this works - or could work?
8. Has the advent of EIS affected your existing arrangements for departmental allocations or school/departmental contributions?
9. If there are several routes to obtaining an EIS - how do you choose amongst these? (on basis of service provider, bundling with existing services or random choice?).
10. How do you choose between the various NESLI deals offered? (is there a formal collection development strategy?)
11. Are subject based /learned society deals of more interest to you than publisher based deals? (particularly with a view to charging departments, for example?).
12. How do you view the future of electronic journals for you? How do you manage the e-journals in relation to the existing periodicals functions?
13. How does use of e-journals and EIS affect the way printing / photocopying services are organised - and financed? Have you any evidence for preferences of users for table of contents/abstracts versus full text?

Evaluation:

14. How do you obtain feedback on usage of EIS? How effective do you judge your provision of EIS to be? How would you expect to assess the

performance of the services?

Future Issues:

15. One route for reducing journal subscription costs might be for authors to pay for submission (page costs). How might this affect your institution?
16. What evidence do you have that supports the increasing use of electronic services affecting book loans? Are any patterns emerging?
17. Increasingly, textbooks are supplied with disks and electronic monographs are coming online, how do you foresee the management of such items?
18. How involved are you with decisions on resource linking within VLEs – i.e. Blackboard, WebCT etc.?
19. How much help/involvement do you get from your RSC (JISC Regional Support Centre)?

Appendix 5.1 Action research site A Engineering Web sites

ENGINEERING WEBSITES (NB Format has been altered)

TO HELP YOU WITH YOUR ASSIGNMENTS HERE IS A LIST OF SOME USEFUL ENGINEERING WEBSITES, BOTH MECHANICAL AND ELECTRICAL ENGINEERING. SOME MAY PROVE TO BE MORE USEFUL TO YOU THAN OTHERS. SEARCH THROUGH EACH WEBSITE AND FIND FOR YOURSELF THE BEST ONES SUITED TO YOUR PARTICULAR PURPOSE. THOUGH ONE OR TWO OF THE WEBSITES REQUIRE A SUBSCRIPTION TO ACCESS FULL INFORMATION THEY DO ALLOW LIMITED ACCESS TO NON-MEMBERS. THERE ARE EXTRA COPIES OF THIS LIST IN THE LIBRARY. EACH OF YOUR TUTORS SHOULD ALSO HAVE A COPY. IF YOU COME ACROSS OTHER USEFUL WEBSITES PLEASE TAKE NOTE OF THEM TO SHARE THEM WITH YOUR FELLOW STUDENTS AND TUTORS. THERE ARE SOME WEB SITES ON YOUR COLLEGE INTRANET. FROM THE INTRANET HOMEPAGE FOLLOW THE LINKS FROM 'USEFUL WEBSITES' TO 'ENGINEERING'.

Action
Research in FE
Department of Information Studies, University of
Wales
Aberystwyth

03/12/2002

<http://www.vts.rdn.ac.uk/tutorial/eng>

Internet for Engineering (General and Automotive) This is a FREE interactive tutorial and is designed to teach students and staff how to use the internet effectively and when to combine the internet with other appropriate sources of information. You can tour a range of sample sites, to find out to expect to find on the web, discover how to use search time effectively, and to judge when information is reliable on the web and plan how to use the web in future studies/work-

<http://www.eevl.ac.uk>

The Internet guide to engineering, mathematics and engineering. This site is a gateway to high quality engineering, maths and computing resources on the web. In engineering, all aspects of engineering are covered, many of which link to the college curriculum, e.g. mechanical engineering (including automotive engineering), materials engineering (including construction and building materials), civil engineering (construction engineering), engineering design, electrical/electronic and computer engineering, aerospace engineering and others.

<http://www.uk-engineering.net>

A source guide to the UK engineering industry. Provides key information on the expertise provided by UK based engineering companies.

<http://www.maintenanceresources.com>

Includes how-to articles, a glossary and troubleshooting grids.

<http://www.efunda.com>

The site offers over 30,000 pages of engineering fundamentals and calculators.

<http://www.autoindustry.co.uk>

This site has a great deal of automotive information e.g. industry, government, technology, data, news and automotive-related books.

<http://www.er-online.co.uk>

Engineering resources online include institutions and trade organizations, engineering publications and engineering software analysis/cad/catalogues and more.

<http://www.engineers4engineers.co.uk>

Technical information for engineers - design, electronic, electrical, mechanical, IT, software etc.

<http://www.e-design.org.uk>

This site includes links to organisations which may be able to offer additional advice and support for your electronics design project and a supplier database that can help you locate industry sources of devices, design tools and support services.

<http://www.imech.org.uk>

The website of the Institution of Mechanical Engineers Amongst other things the site includes links to :abstracts of on-line journals.

<http://www.itsneng.ac.uk>

Includes a wealth of engineering resources, relevant up-to-date international news and events information and topics for debate.

<http://www.bmpcoe.org>

The Best Manufacturing Practices (BMP) web site The source for best practices s and innovative technologies the site includes an 'Electronic Library comprising <http://www.bmpcoe.org/guideline/books/index.html> covering a variety of engineering topics.

<http://www.icrank.com>

The mechanical engineering design resource portal. Click on 'Knowledge Center' 'Design Tools', 'Computing' and 'Vendors'.

<http://www.awise.org>

The website of the Association for Women In Science and Engineering.

<http://www.howstuffworks.com>

The name speaks for itself.

<http://www.baddesigns.com>

Again name speaks for itself.

<http://www.cadtutor.net>

This site consists of free help and tutorials for AutoCAD and associated software on the web.

<http://www.cadtutor.net/acad/index.html>

provides over 40 original tutorials covering various AutoCAD versions. Topics cater for beginners and advanced users,

<http://www.caenet.com>

The online resource from Computer-aided Engineering Magazine. Includes 'Product News Alert'.

<http://www.hse.gov.uk>

The Health & Safety Executive website

Appendix 5.2 Action research site A questionnaire

ENGINEERING WEBSITES LIST - evaluation

JISC/JUSTEIS ELECTRONIC INFORMATION SERVICES USER SURVEY
DEPARTMENT OF INFORMATION STUDIES UNIVERSITY OF
WALES, ABERYSTWYTH

Please take a few minutes to complete this questionnaire and hand it back to your tutor. Please circle the answers. Many thanks for your time.

I Have you received a copy of the *Engineering Websites List*?

Yes No

(If no, there is no need to complete the rest of the questionnaire)

9. Did you find the list useful?

Yes

No

(If yes, why?)

(If no, why not?)

3. Did you ask anyone for help in using the list at any time?

Yes

No

(If yes, who?)

4. Where was the computer workstation which you used? (You may circle more than one)

office home library classroom laboratory other

5. Can you think of any improvements that could be made to the list?

6. Do you think you will refer to the list again either during your studies or at work?

Yes

No

7. Have you any further comments to make?

Sian Spink

JUSTEIS 11/03/2003

Appendix 5.3 Action research site B exercise

KCC BTEC National Diploma in Popular Music

Internet Music Research Exercise

Name

Submission Deadline

This exercise is designed to develop and assess student skills in obtaining information from the internet, and to demonstrate the ability to use information effectively. In the event sites are unavailable, find viable alternatives.

Tasks: Using the information provided:

- 1) access the indicated sites via Yahoo/Google or other search engine
- 2) download information
- 3) print out
- 4) save the data

Harmony Central

Download an instrument lesson

Present lesson to peer group

Date of presentation

International Lyrics Server

Download the lyrics for any song by an artist of specific interest to you

MIDIfarm

Download a MJDI file of your choice

(Use printer in room A108 to print score of MIDI file)

Rough Guide to Rock

Download a biography of a band/artist of specific interest to you.

Press/Media Review

Download a review of a concert or recording of a band/artist of specific interest to you.

Guitar Tabs.net

Download and learn a guitar piece of your choice

Date evidenced

Identify and provide addresses for an additional two sites individually researched, which contain music information specifically of interest to you.

1

2

Tutor:

Date

Appendix 5.4 Action research site C questionnaire

JISC/JUSTEIS Electronic Information Services Monitoring

Department of Information Studies
University of Wales, Aberystwyth

Would you please take a couple of minutes to complete this questionnaire and hand it back to your tutor. Many thanks for your time.

You recently completed an assignment on careers (Unit 20) and these questions are about information you may have used to complete it.

Did you receive guidance from any of the following on where to look for sources of information? Please tick the appropriate boxes.

- | | |
|-----------------|--------------------------|
| Course tutors | <input type="checkbox"/> |
| Client Guidance | <input type="checkbox"/> |
| Friends/Family | <input type="checkbox"/> |
| Library staff | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

What information sources did you use for your project?

- | | |
|-------------------------------|--------------------------|
| General internet sites | <input type="checkbox"/> |
| Library books/magazines | <input type="checkbox"/> |
| Kudos database | <input type="checkbox"/> |
| Organisation/company leaflets | <input type="checkbox"/> |

If you needed to ask for help with this project, please state what help you required and who you asked.

.....

.....

.....

.....

Where did you carry out most of the research for your project?

- | | |
|----------------|--------------------------|
| At home | <input type="checkbox"/> |
| At the library | <input type="checkbox"/> |
| In classroom | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

On reflection, is there anything you consider would have been helpful to you to complete your project more successfully?

.....

If you browsed internet sites for this project, would you please list the sites you used.

.....

.....

.....

Have you any further comments you would like to make on this project and the available information?

.....

.....

.....

.....

May 2003 ret/UWA

Appendix 5.5 Action research site D materials

Searching with Boolean Logic

If you have already tried finding information via one or more of the search engines, you will have noticed search boxes within the sites to enable advanced searching. This can be done in several ways - using a string of terms or phrases or a combination. Boolean logic can be applied to combine terms with the use of **AND, OR, NOT, BUTNOT, NOR, NEAR, ADJACENT**. All search engines differ so it is advisable to read the online Help for individual search instructions when first using a particular search engine. For example, you may be required to type terms in either upper or lower case or use the symbols **+**, **-**, **&**, **/** instead of the above words.

How To Use Boolean Logic

The easiest way to remember the use of **AND, OR, NOT** is as follows:

AND is used to narrow your search. It will search/find terms only where they appear in the same site.

OR is used to widen your search. It will search/find all the terms wherever they appear, regardless of whether or not they are in the same site.

NOT is used to exclude terms. It will only search/find one term in the site and should exclude the other - this may not always be the case.

BUTNOT is used as **NOT**.

NEAR or **ADJACENT** are used to narrow the search to terms of specific distance from each other. They will only search/find the terms as specified by you.

The use of brackets is important as they can change the meaning of the search:

welfare **NOT** (cat **AND** dog) - will search/find everything on welfare but will not retrieve anything on cat or dog.

(welfare **NOT** cat) **AND** dog - will search/find everything on welfare and dog but not cat.

"animal welfare" - the use of quotation marks will search/find the exact phrase.

Some search engines may prefer phrases to be surrounded by inverted commas.

A wildcard or truncation mark can be either an asterisk, or a dollar sign, or a question mark. This can be used at the beginning or end of a term.

***ball** - for football, netball, handball etc.

surg* - for surgery, surgical, surgeries.

Using a wildcard means you do not need to type several versions of the same term. Remember to check the online Help to see which wildcard is to be used.

Industry and Organisations Assignment.

Useful resources for your coursework:

www.lantra.co.uk - good for an overview on the animal care industry; careers information and significant features of the animal care business.

www.rspca.org.uk - good for current issues locally and nationally, also for welfare charities info, annual turnover etc, to complement the guest speaker.

www.defra.org.uk - excellent for government issues concerning animal health and welfare, sustainable development, grant schemes and finance.

www.waltham.com - a good site for pet food manufacturers for your allied industries. Pedigree pet foods also.

www.rvc.ac.uk - web site for the royal veterinary college covers animal care issues.

www.bsas.org.uk - includes useful links to current issues within animal care and welfare.

www.ufaw.org.uk - excellent website on animal issues.

www.legislation.hmso.gov.uk -all the legislation needed is on this site- use the search engine!!!!

www.wasteguide.org.uk - a useful site covering sustainable development and environmental issues.

www.europa.eu.int - website of the European union-
useful guide to current issues and legislation.

www.cabtsq.org - General information site for the
Companion Animal Behaviour Therapy Study Group, an
affiliate of the British Small Animal Veterinary
Association.

www.petcare.org.uk - Pet Care Trust. A charity website
promoting the interests of trade and safeguarding the
welfare of pet animals.

www.fabcats.org - Feline Advisory Bureau. Free
information sheets available under “Learn”.

Appendix 5.6 Action research site D questionnaire

JISC/JUSTEIS Electronic Information Services Monitoring

**Department of Information Studies
University of Wales, Aberystwyth**

Would you please take a couple of minutes to complete this questionnaire and hand it back to your tutor. Many thanks for your time.

You recently completed an Integrated Vocational Assignment on organisations and careers in the animal care industry, and these questions are about information you may have used to complete it.

Did you receive guidance from any of the following on where to look for sources of information? Please tick the appropriate boxes.

- | | |
|-----------------|--------------------------|
| Course tutors | <input type="checkbox"/> |
| Careers Service | <input type="checkbox"/> |
| Friends/Family | <input type="checkbox"/> |
| Library staff | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

What information sources did you use for your project?

- | | |
|-------------------------------|--------------------------|
| General internet sites | <input type="checkbox"/> |
| Library books/magazines | <input type="checkbox"/> |
| Kudos database | <input type="checkbox"/> |
| Organisation/company leaflets | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

If you needed to ask for help with this project, please state what help you required and who you asked.

.....

.....

.....

.....

Where did you carry out most of the research for your project?

- | | |
|----------------|--------------------------|
| At home | <input type="checkbox"/> |
| At the library | <input type="checkbox"/> |
| In classroom | <input type="checkbox"/> |
| Other | <input type="checkbox"/> |

On reflection, is there anything you consider would have been helpful to you to complete your project more successfully?

.....

If you browsed internet sites for this project, would you please list the sites you used.

.....

.....

.....

Did you refer to the list of web sites given to you by your tutor?

Yes

☐

No

☐

Have you any further comments you would like to make on this project and the available information?

.....

.....

.....

.....

Responses to the questionnaire

Code: 0002	N = 7 replies										
Guidance on where to find sources of information	<table> <tr><td>Course Tutors</td><td>8</td></tr> <tr><td>Client Guidance</td><td>0</td></tr> <tr><td>Friends/Family</td><td>3</td></tr> <tr><td>Library Staff</td><td>7</td></tr> <tr><td>Other</td><td>0</td></tr> </table>	Course Tutors	8	Client Guidance	0	Friends/Family	3	Library Staff	7	Other	0
Course Tutors	8										
Client Guidance	0										
Friends/Family	3										
Library Staff	7										
Other	0										
Information sources used	<table> <tr><td>General Internet Sites</td><td>7</td></tr> <tr><td>Library Books/Magazines</td><td>7</td></tr> <tr><td>Kudos CareersDatabase</td><td>0</td></tr> <tr><td>Organisation/Company Leaflets</td><td>7</td></tr> </table>	General Internet Sites	7	Library Books/Magazines	7	Kudos CareersDatabase	0	Organisation/Company Leaflets	7		
General Internet Sites	7										
Library Books/Magazines	7										
Kudos CareersDatabase	0										
Organisation/Company Leaflets	7										
Help required	No replies to this question										
Where research carried out	<table> <tr><td>At Home</td><td>0</td></tr> <tr><td>At the Library</td><td>7</td></tr> <tr><td>In the Classroom</td><td>0</td></tr> <tr><td>Other</td><td>0</td></tr> </table>	At Home	0	At the Library	7	In the Classroom	0	Other	0		
At Home	0										
At the Library	7										
In the Classroom	0										
Other	0										
What would have been considered helpful	Nothing considered more helpful										
Internet sites used	<table> <tr><td>Web site list</td><td>2</td></tr> <tr><td>Google</td><td>2</td></tr> <tr><td>No reply</td><td>4</td></tr> </table>	Web site list	2	Google	2	No reply	4				
Web site list	2										
Google	2										
No reply	4										
Further comments	0										

Appendix 5.7 Action research site D questionnaire items

1. When you last carried out some research for an assignment task or course work which of the following did you use?
Newspaper
Own notes
Journals
Internet
Books
Interview someone
Television
Other?
2. Think back to when you last used the internet to carryout research for an assignment/study task:
3. What was the task?
4. What server did you use?
5. Why did you choose this server?
6. Where did you access this?
7. Did you ask for help?
8. How much time did you spend on this piece of research?
9. How useful was the information you retrieved from your search?
10. Was accessing the internet for this work your first choice?
11. Did you consider using an alternative research source (books, journal etc.)?
12. How useful is it having access to the internet for college/assignment research and why?
13. On a scale of 1-10, how successful are you in finding useful information off the internet for college/assignment work? (1= never successful. 10=100% successful all the time)
14. If you have not answered 10 on the above scale, explain your answer.
15. How good are you at finding information on the Internet?
16. How much skills/retrieval training have you had on using the Internet for research?
17. Would specific input on information retrieval from the Internet be of benefit to you and why?

Appendix 5.8

Sources last used	What was task	Which server	Why did you choose server?	Where did you access it	Did you ask for help?	Time spent	How useful?	Was Internet first choice	Alternatives	How useful is Internet	Scale of success
Internet/books	Find out about legal aid for law and order last week	www.elawstudent.com	it's all about law & order	www.google.com	no	1hour	very good. Helpful	yes	no	very useful because it's in the college and you have to travel far to get their and it's easy to get a free computer	7
Own notes/Internet	Law assignment 1 task 5	Google	It's easy	College computers	no	25 mins	Reasonable	Yes	no	It's great because it's quick & easy	7
Own notes/Internet /Books	Law	Google	College home page	College computer	no	30 min	quite useful	yes	yes, books	very - saves time searching through library	8
Own notes/Internet	Law and the legal system, Research Bail and Remand	www.Google.com	Easy to use has lots of info	At home and in college	no	45 mins-1hr	Very helpful, enabled me to complete work	yes	not at first	very useful because it's a fast and efficient way to find information	7
Own notes/Internet /television	Human behaviour poster	Google	Its quick and easy, its the college server	college computers	no	1-3 hrs	very useful	yes	yes, I used my own notes	very useful. It's the first place that you think of looking. Its quicker than books	8

Own notes/Internet	Law assignment	Google e-lawstudent.com	Provides all info & uptodate Acts I need to do task	In the LSC	no!	2 hrs, 15 mins, 17 seconds!	V. useful, everything I need on one web site	Yeh, cause I had used e-lawstudent before and it was great!	Yeh, I also referred to 3 law books I got from the library	Very useful, v. hard without everything I need at the 'click' of a button.	9
Newspaper /Internet/books /television	Uniformed service assignment	Google	Because it's the first one that appears on the screen	Learning Centre	no	3-4 hrs	very useful	no	yes I researched books first	Very, because the Internet holds nearly all the information you need to know	8
Own notes/Internet /Books	Law coursework	Google	Because it's the first page that comes up. The start page	College Learning Centre	no	3 hrs	Very useful, especially for quotes	yes	yes	Very useful for finding the info quickly & easily	8
Own notes/Internet/ Books	Law & legal system coursework	Google	College start page	college - learning centre	no	3 hrs	very useful/helpful. Good for quotes	yes	yes	Very useful. It is very easy and quick to use	8

Own notes/Internet/B ooks	Law & the legal system assignment	Google	Because it is the first one that appears on the screen	Learning Centre	no	Still doing it. It depends on the tasks and how long they have to be	It depends. Sometimes the Internet search is useless and brings up the wrong info. Other times it brings up a lot of useful stuff	yes	I used books but its easier & quicker to use the Internet because it finds it straight away (most of the time)	very useful. For the reasons on Q11 [previous question]	5 [or 9 can't read it]
Internet/books	Find out the meaning of a straight forward ghost story	Google	quick	College	no	1 hr	pretty useful, it gave me a starting point for the piece of work	yes	books	its close-by, free	90%

